Light and Lighting

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Light and Lighting

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Principal Contents:

God Save The King!

TWO years ago we presented an illustrated account of the floodlighting in connection with the Silver Jubilee of King George V. Now we deal in a similar manner with the illuminations in celebration of the Coronation of his successor, King George VI. Long May He Reign!

The floodlighting last month, not only in London, but throughout the entire country, was on a vaster scale than ever before. The event attracted the greatest influx of visitors from the Colonies and Dominions within living memory. The arrangements for Coronation Day were made with signal skill and foresight. Only one thing was lacking—one missed the series of perfect summer days of the Silver Jubilee, when natural floodlighting from the setting sun preceded the artificial effects each evening, for which the melting blue sky furnished an ideal background.

On that occasion we wrote that the twenty-five years of public service of King George V., and the deserved devotion of his people, shone "like a candle" in the troubled and darkened world of to-day. These troubles have not lifted. It may be that the sky is even darker than it was two years ago.

Yet against such a sombre background this devotion to the Throne and all it represents, this unity of effort by King and People in a common service, still shine out with as great a brilliance as ever.

I.E.S. Annual Meeting

The annual general meeting of the Illuminating Engineering Society, on May 19, as usual afforded a welcome reminder of the Society's progress. We think that anyone reading the annual report of the Council must have been impressed by the signs of vigour and progress. The advance is not to be measured in terms of increased membership or income alone, nor even by the volume of work accomplished. What is even more satisfactory is the continual expansion in the circle of members sharing in the actual work and responsibility. The newly formed sections are already showing what a useful reservoir of latent talent exists. On this special occasion the Society departed from its tradition of inviting a lecture from some expert from abroad. It was no doubt felt that the Coronation year might well be used to put on record some of the work done in this country. Accordingly, a series of brief contributions describing the Coronation lighting was arranged. This led to a most entertaining discussion in which several visitors from overseas took part.

Photometric Test Plates

Our attention has been drawn to an instructive account by Mr. A. K. Taylor, which recently appeared in the Proceedings of the Physical Society, of some tests on materials for photometric test plates. Whilst much care is often lavished on the design of photometers of the visual type, quite grave imperfections in the test plate are sometimes tolerated, and the serious effect of errors arising in the measurement of light striking the surface very obliquely are not sufficiently realised. Mr. Taylor experimented with seven materials, pot opal glass, white filter paper, white blotting paper, white matt celluloid, plaster of paris, magnesium oxide, and magnesium oxy-chloride. Of these materials, the last named, which has a total diffuse reflection factor in the neighbourhood of 0.955 to 0.960 for diffuse incidence, appears to present signal advantages, though somewhat difficult to clean. Pot opal glass may also serve if the angle of incidence is limited to 70°. Matt celluloid is liable to become discoloured with exposure to light, besides tending to deviate from the flat, and this, too, cannot be easily cleaned without altering the reflection characteristics. Filter paper and blotting paper have the apparent advantage of simplicity, but samples are inclined to vary one with another, and the surface, no doubt, is not very resistant and is easily spoiled.

The "Grumble Point"

At what value of failing daylight does an operator instinctively turn on the artificial light—what, in short, is the average "grumble point," as it has sometimes been described? This question has been answered, on behalf of clerical workers, in a very instructive report by Mr. L. H. McDermott recently issued by the D.S.I.R.* The experiments were made in a room containing eighteen typists, each having a separate desk and lamp. By the aid of a most ingenious apparatus the current flowing when any typist turned on her lamp automatically actuated a cinematograph camera which took photographs of the scale of a micro-ammeter connected to a photo-electric cell placed near the window. Simultaneously, the number of the typist who switched on the light, the time of day and the date were recorded. It was thus possible to infer the daylight illumination at each desk when the change was made.

The workers were scattered about the room so that the daylight factors for each desk were widely different, and, of course, at any one moment the absolute value of illumination on the various desks also differed greatly. The results suggest that the "grumble point" (if one may continue to use this colloquial term) depended much more on absolute illumination than on the daylight factor. Considering the variety in circumstances, the values fall remarkably close together. Excluding one apparently abnormal case, the extreme limits lie between 2.0 and 9.8 foot-candles, and a scientific analysis yields 5 foot-candles as an approximate average value.

This is a most instructive result, and a strong confirmation of the views of those who believe that 5 to 10 foot-candles will answer most ordinary requirements for clerical work. From a knowledge of the mean average variation in daylight for the various months of the year, it is possible to tabulate the periods for which artificial light is necessary with different daylight factors. It is instructive to note that, during the darkest winter months, a diminution of the factor from 4 per cent. to 1 per cent. may reduce the period during which natural light suffices from seven to three hours. If the daylight factor is reduced to 0.5 per cent., artificial light may become continuously necessary during the months of November, December, and January!

* Daylight Illumination Necessary for Clerical Work. Dept. of Sci. and Ind. Research, Tech. Paper No. 18. (H.M. Stationery Office. 6d. net.)

Industrial Lighting Problems

(Continued from p. 135, May, 1937)

In what follows we give a summary of further contributions, illustrating the solution of special problems in industrial lighting, presented at the meeting of the Industrial Lighting Section of the Illuminating Engineering Society on March 24th.

THE LIGHTING EQUIPMENT OF A MODERN PRINTING WORKS

By L. M. Tye

These extensive and up-to-date Park Royal works have been erected and equipped by Messrs. Waterlow and Sons, Ltd., entirely for the production of the "Radio Times" and "World Radio." Mercury vapour lamps are used for practically the whole installation, in view of the good definition characteristic of their light for black and white processes.

For the chief outside lighting, e.g., the entrances to the paper reel stores, despatch bays and garages, wall reflector lanterns, equipped with refracting plates in the front and flashed opal glass in the sides, are used with 150-watt mercury discharge lamps. In this way good localised light for unloading and loading purposes and a good forward light for approach to these areas are obtained.

In the reel stores general lighting of 4 foot-candles is afforded by sixteen 150-watt mercury discharge lamps with prismatic industrial reflector units arranged on centres 24 ft. x 30 ft. and 16 ft. high.

From the reel stores the reels are moved to the basement of the press room, where they are transferred to the machines. Along each side of the presses at this level 60-watt prismatic bulkhead units are arranged to ensure good lighting to the ends of the reel spindles and to facilitate the process of placing them in position. For the illumination of the motor driving gear and for the aisles between the presses circular prismatic bulkheads, equipped with 75-watt lamps, are employed.

In the press room floor, the most important department, there are two separate problems: (a) The general lighting of the whole works area, with the illumination of the paper webs and upper structure; and (b) the provision of adequate illlumination for the cylinders.

It was considered essential to keep all lighting units away from the actual presses. The existence of galleries around the presses, and the need to avoid consequent obstructions as far as possible, had also to be borne in mind. It was therefore decided that the most satisfactory arrangement would result from the use of centre aisle-lighting, adopting two approximate fundamental heights, 13 ft. 6 in. for the general lighting and 7 ft. for the cylinder illumination.

For the general lighting, a special unit, comprising a clear prismatic reflector and bottom refracting dish supported in suitable metalwork and surrounded by an opalescent cylinder, was devised. These units were equipped with 150-watt mercury discharge lamps.

For the cylinder lighting, the width of the aisles demanded that the units should be directional, and two concentrating refractor panels were adopted, the units being arranged in a centre line with the cylinders. The sides and base of these lanterns were also

A general view of the Press Room.

A section of the Press Room Basement.

A section of the Compositors' Dept.

NIGHT PHOTOGRAPHS SHOWING LIGHTING OF THE NEW PARK ROYAL WORKS OF MESSRS. WATERLOW & SONS.

fitted with flashed opal glass. (These units have been designed to take the new 80-watt high-pressure mercury lamps.)

Upon these rotary press machines, the publications are not only printed, but cut, folded, and stitched, being in due course transferred to automatic conveyors. These conveyors deliver the products into the despatch bays.

The lighting of the despatch bay has been carried out with a staggered lighting, arranged on centres 20 ft. by 20 ft., and approximately 14 ft. high.

Prismatic industrial reflectors also equipped with 150-watt mercury lamps are here used, and a general illumination intensity of 6 foot-candles is provided.

In the compositors' section general lighting of 20 foot-candles has been attained, 150-watt mercury discharge lamps in conjunction with prismatic industrial reflectors arranged on 9-ft. centres, height 13 ft., being used. The results, both in respect of definition and absence of shadows, are remarkably good.

Mr. Tye expressed acknowledgment to Mr. V. E. Goodman, general manager of Messrs. Waterlow and Sons, Ltd., for permission to take these photographs, and to Mr. J. A. Reeve, manager of the Park Royal plant, and his chief electrical engineer, Mr. Wright; also to Mr. T. Ludgate, director of Messrs. Bell Bros. (London), Ltd., the electrical contractors responsible for the layout and erection of the power circuits, controls, and lighting.

(We are indebted to Messrs. Holophane Ltd. for the blocks illustrating Mr. Tye's contribution.)

SOME SPECIAL APPLICATIONS OF GAS LIGHTING IN FACTORIES

By J. B. Carne

These installations deserve special attention, not only because the methods served to provide good illumination, but because gas lighting played a special part in the solution of the problems involved.

The heat which is generated with gas lighting has always been highly valued by factory owners and managers. With the passing into law of the new Factories Bill this property of gas lighting is likely to assume even greater importance. Some details are accordingly given of two factories. In one of these moderately high intensity of illumination was required, and general heating was to be effected without using floor space. The other combined both of the foregoing conditions with positive ventilation. It is in the second example that the heating effect which accompanies gas lighting is exploited to the fullest extent.

In a normally efficient gas lamp emitting approximately 2,500 lumens there is produced 5,500 B.Th.U's per hour. About 1-7 of this heat, i.e., 800 B.Th.U's, is in the form of radiant heat, which is radiated in a downward direction, whilst the remaining 4,700 B.Th.U's is in the form of convected heat.

Two views were shown of a metal factory in which a large number of lamps provide even distribution of illumination which enables all work, including accurate turning operations, to be performed without the aid of any local lighting. At the same time there is radiated downwards from each lamp 800 B.Th.U's per hour. The factory is, therefore, not only floodlighted, but also gently "flood heated."

In the second case of a piano works, the problems of maintaining a low relative humidity and a moderately high temperature, as well as providing good illumination, were set. To satisfy all these requirements the 4,700 B.Th.U's in convection from each lamp is turned to account in the following manner. The equipment is designed to allow the products of combustion to enter the ductwork above. The ductwork becomes heated to approximately 130° F. and thus, not only a positive ventilation is effected, but increased radiant heat is also

A photograph showing the effective Neon Sign Lighting outside the Park Royal Works of Messrs. Waterlow & Sons, Ltd.

obtained. Approximately, 500 B.Th.U's per hour pe lamp is radiated from the ducts into the factor The total radiation is therefore increased to abo 23 per cent. of the heat in the gas consumed, and addition there is another 12 per cent. of the heat the form of convection from the lamp fittings a ductwork. Thus the heating effect of each lamp equal to that of a three column steam radiator. In th system it is evident that a little more than 60 p cent. of the energy is used for ventilation, and th quantity extracts in practice approximately 4 cubic feet of air per hour per lamp.

By this system of lighting all that was desired w provided at the running cost of the lighting alone.

Another problem, which often arises in factories the provision of liberal quantities of artificial da

An installation in which effective use is made of the heat, a well as the light, of gas lamps.

light illumination. The "daylight" mantle provi a source, the light from which resembles in col natural light, and which possesses a luminous e ciency only a little lower (approximately 20 p cent.) than that of the ordinary mantle.

One installation described in which this is the c was the ironing and sorting room of a laund "Daylight" lighting in this case allows satisfact colour sorting and avoidance of scorch markings the goods during ironing operations. Another inst lation was the crust-sorting room of a tannery. intensity of approximately 15 foot-candles of d light is required for this purpose. It is found th

the "daylight" mantle provides a form of artificial light in which this sorting can be done very satisfactorily. Other industrial processes in which "daylight" mantle illumination has proved most satisfactory, include cloth and leather dyeing, biscuit making, hop sorting and colour printing.

In conclusion, Mr. Carne expressed acknowledgment of the assistance given by Mr. Dean Chandler in providing the various illustrations.

THE POLISHING OF STAINLESS STEEL SHEETS

By E. L. Calvert

The problem under consideration was of a somewhat special nature, as the cost of installation did not really matter, maintenance and current costs were of relatively small importance, and the appearance of the fitting was of no great moment.

The whole of the works was rewired to suit the new lighting, and the design, other than for technical reasons, did not matter two straws. The main point of design was to keep out the heavy accumulation of greasy grime which is prevalent in this particular process.

Owing to enormously increased demand for stainless steel sheets, it had become necessary for the works to run through twenty-four hours per day. Whereas during the hours of actual daylight the polishing and inspection could both be carried out with efficiency, it was found that artificial illumination (of the "mellow" tungsten class), no matter of what intensity, was quite useless in revealing defects in the surface of the sheet. More particularly was this apparent when the lighting was of *direct* character.

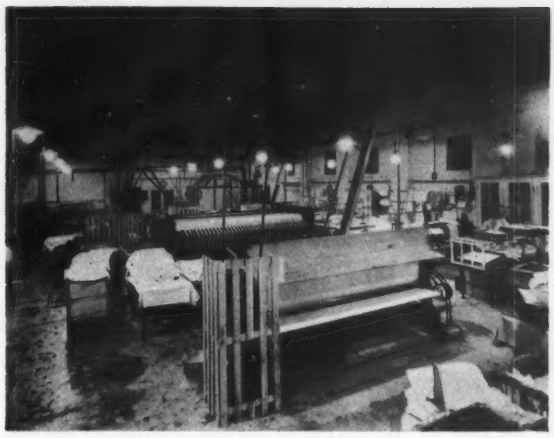
Diffused lighting system was therefore made the subject of the first experiments, but proved to be of little real value, as "colour" was still unsuitable. A further series of trials revealed that even "Day Blue" lamps were not fully satisfactory, although showing improvement in colour rendering. Eventually, a special fitting was designed, combining colour value with diffusion. The aim in this design was to reproduce on a small scale the *natural effect of a single pane of a skylight* through which a diffused daylight (such as from a lightly overcast sky) was directed.

The glazing was carried out with a "duplexed" arrangement of diffusing glass, combined with a day colour-filter using six 100-watt standard pearl gasfilled tungsten lamps. The lamps were mounted about 4 ft. over the bed-plate of the polishing machine, and approximately the same distance in front of the 4 ft. 6 in. rotary mop, thus giving the operator the opportunity to observe defects and faults by viewing the light reflected in the polished surface from convenient angles and positions.

Hitherto, the period of "night" polishing had been based on "average time" taken for real daylight work, but it was naturally discovered that the operator had spent either too long or too short a time on any given sheet, when the inspection by real daylight took place the following day. If too short a time had been spent, it meant that the sheet had to be placed again on the bed-plate and finished off, a process resulting in double labour, much loss of time, and heavier costs.

Real daylight inspection proved the efficiency of the final system, which was adopted throughout the works.

In the design finally adopted six 100-watt pearl gasfilled lamps were incorporated. The lamp-holders were inset into the false ceiling of the fitting, which provided a panel approximately 24 in. by 16 in. in dimension. The overall height was about 14 in. The glass panel was inset to obviate any ledges liable to accumulate grime, and dust-covers were provided to keep the fittings clean.



A Laundry illuminated by daylight gas mantles. Average intensity of illumination at working levels 7.5 foot-candles.

Safety Measures with Electric Appliances

Mr. A. P. Turnbull, who is associated with the New South Wales Department of Railways, has recently written expressing his appreciation of Mr. Murray's paper before the Illuminating Engineering Society.* He mentions that some of his recommendations have been in force in the workshops of the New South Wales Railways for the past thirty-five years.

These safety measures were introduced by the late Mr. O. W. Brain. When he became chief electrical engineer in 1900, 600 volts D.C., with earthed negative, was used largely for work in the New South Wales Railways' workshops, but in some shops 240 volts A.C., 25 cycle, was also available. Many portable hand-lamps were in use, and portable electrical tools were beginning to be applied. Mr. Brain fixed a maximum operating voltage for tools and hand lamps at 120 volts, and on A.C. lamps at 25 volts, the reduction to these values being effected by motor generators and transformers respectively. As a result of this foresight, there has not been a single accident with the many thousands of these appliances used during the intervening years.

Later, when it became necessary to authorise portable hand-tools operating at 240 volts A.C., Mr. Brain insisted on frequent inspection by a skilled staff. He was also in advance of the general practice in those days in stressing the need for frequent cleaning in order to maintain maximum effect from lighting units. He insisted on using only the highest grade B.C. holders, many of which are still in use, and there is no record of any serious shock accident. All the lampholders used have been metal cased—therefore Mr. Turnbull urges that this form should not be discouraged, if of good workmanship, especially as the electrical industry may have to come back ultimately to metal casing.

It is interesting to learn that consideration is being given to providing visual indication of defective earthing on portable electric tools by connecting a neon pilot light across the phase connection on the tool, and the body of the tool. This will give a definite indication of a break in the earth connection.

* See "Light and Lighting," December, 1936, p. 366.

Literature on Lighting

(Abstracts of Recent Articles on Illumination and Photometry in the Technical Press)

(Continued from Page 139, May, 1937)

II.—PHOTOMETRY.

136. Report of Committee on Photo-electric Portable Photometers.

Am. Illum. Eng. Soc. Trans., 4, pp. 379-420, April, 1937.

This report describes in detail the errors which arise in the use of photo-electric cells. Recommendations are made for the avoidance of such errors, and a test box, for checking the calibration of such photometers is described. J. S. S.

137. Photometry of Electric Discharge Tubes.

Marcel Laporte. R.G.E., Vol. XLI., No. 16, pp. 483-494, April 17, 1937.

Describes work on the production of electric-discharge tubes emitting light of "white" colour; spectrographic results are given. Photometric tests, using a thermopile method of measurement, are described. W. R. S.

138. The New G.E. Light Cell Reflectometer.

Anon. Magazine of Light, VI., pp. 32-33, April, 1937.

A brief description is given of a light sensitive spherical reflectometer, recently developed. With a similar auxiliary sphere the apparatus can be used to obtain transmission factors. C. A. M.

139. Nela Park Laboratory Develops Brightness Meter.

Anon. Magazine of Light, VI., No. 4, p. 34, April, 1937.

A brief description, with a photograph, is given of a new brightness meter recently developed at Nela Park. C. A. M.

140. Glass Colour Filters for Special Applications.

H. P. Gage. J. Opt. Soc. Amer., 27, pp. 159-164, April, 1937.

A method is described of calculating the thickness required of two special glasses used in combination, one yellow, the other a new type of blue green, for correcting the spectral response of a photronic cell to the spectral luminosity of the eye. F. J. C. B.

III.—SOURCES OF LIGHT.

141. Comparison of Light from Mercury Vapour and Incandescent Filament Lamps for Visual Tasks.

C. S. Woodside and Harris Reinhardt. Am. Illum. Eng. Soc. Trans., 4, pp. 365-378, April, 1937.

The time required for sorting and inspection work was used as a basis for the comparison of the light from mercury vapour and tungsten filament lamps.

Tests in laboratory and factory showed no significant difference between the two light sources. J. S. S.

142. Combination 100W. Mercury Flood-Flash Lamp and Control Device for Use by Commercial Photographers.

Anon. Am. Illum. Eng. Soc. Trans., 4, p. 351, April, 1937.

A special 100W. mercury vapour lamp is said to give an average light output of 300,000 lumens during the passage of a momentary discharge of energy. A controlling device allows the period of the discharge to be varied from one-twentieth to one-fiftieth of a second. This lamp has the same actinic value as a No. 20 Photoflash lamp, but can be used for an indefinite number of exposures. J. S. S.

143. Sodium Vapour for Floodlighting.

Anon. Electric Journal. Vol. 34, No. 4, p. 169, April, 1937.

The advantages of high efficiency sodium lamps for floodlighting are given, and a description, with photographs, of a factory floodlighting installation is added. R. G. H.

144. "Bulb-within-a-Bulb" Mercury Lamp.

Anon. G. E. Rev., 4, p. 213, April, 1937.

Describes a new 100W. mercury vapour lamp, having an efficiency of thirty lumens per watt, and running at two atmospheres pressure. J. S. S.

145. A New 100W. Mercury Lamp.

Anon. Magazine of Light, VI., No. 4, p. 24, April, 1937.

A small mercury lamp is described, with a photograph. 100 watts are consumed for an output of 3,000 lumens. The inner tube is of extra hard heat-resisting glass. The lamp will run on 120 volts-supply with a choke. C. A. M.

IV.—LIGHTING EQUIPMENT.

146. New Range of Fittings.

Anon. El. Times, 91, p. 608, April 29, 1937.

Illustrations and descriptions of a range of lighting fittings combining opal glass and louvres. W. R. S.

147. What are Alzak Reflectors?

Phelps Meaker. Magazine of Light, VI., No. 4, pp. 37-38, April, 1937.

A brief description is given of the processes in the manufacture of the aluminium reflector, Alzak. Reflection factors are given. C. A. M.

148. Cinema Screen, Size, etc.

Anon. Kinematograph Weekly, Vol. 234, No. 1,569, p. 33, May 13, 1937.

Discusses the relation between cinema screen size and optimum level of illumination, also the effect of surrounding lighting upon necessary picture brilliance. Describes some recent experiments. H. M. C.

149. Recent Developments in Cinema Projector Design.

R. H. Cricks. Ideal Kinema, Vol. V., No. 54, pp. 37, 39, 1937.

An outline of recent developments in cinema projector shutter design and the effect of this on perceptible flicker in the case of standard and colour films. H. M. C.

V.—APPLICATIONS OF LIGHT.

150. Daylight Illumination Necessary for Clerical Work.

L. H. McDermott. D.S.I.R., Illumination Research Tech. Paper, No. 19, His Majesty's Stationery Office, 1937.

Describes a method of automatically recording the value of illumination at which seventeen clerical workers switched on artificial lighting to supplement fading day-

light. The average minimum value was found to be about five foot-candles, and was apparently influenced more by absolute value of illumination than by the "daylight factor." Records of average daily variation of illumination for each month of the year enable the lighting up times corresponding to certain daylight factors to be readily calculated. J. S. D.

151. Light and Architecture.

Anon. Am. Illum. Eng. Soc. Trans., 4, pp. 359-364, April, 1937.

Photographs and short descriptions of some architectural lighting schemes are given. J. S. S.

152. Miscellaneous Lighting Devices.

E. W. Commery. Magazine of Light, VI., No. 3, pp. 32-37, March, 1937.

Numerous instances, with diagrams, are given of the solution of various lighting problems arising in domestic lighting. C. A. M.

153. Electricity in Residential Flats.

Anon. El. Times, 91, p. 591, April 29, 1937.

Gives brief descriptions with illustrations of grill-rooms, entrance bars, etc., in large blocks of flats in London. W. R. S.

154. Discharge Lighting in Euston-road.

Anon. El. Times, 91, p. 502, April 8, 1937; El. Times, 91, p. 518, April 15, 1937.

Euston-road, London, has been relighted with 400W. high-pressure mercury discharge lamps. The installation is said to be very good. W. R. S.

155. Sodium and Mercury Lighting.

Anon. El. Times, 91, p. 569, April 22, 1937.

Gives photographs of a sodium street lighting installation on the Brussels-Antwerp road and a mercury lamp installation in a motor-car body-building workshop. W. R. S.

156. Airport Lighting Specifications of the Department of Commerce.

F. C. Breckenridge. Am. Illum. Eng. Soc. Trans, 4, pp. 421-436, April, 1937.

An analysis is given of two specifications of the American Department of Commerce covering airport lighting. The requirements for the more important items of equipment are outlined, and new methods of specification are suggested. J. S. S.

157. Recent Developments in Aviation Lighting.

H. C. Ritchie. Am. Illum. Eng. Soc. Trans., 4, pp. 437-451, April, 1937.

A description of new equipment for airport lighting is given. The problems of the lighting required for bad weather landings are discussed. J. S. S.

158. Road Tunnels in Paris.

Anon. Elect., 118, p. 516, April 16, 1937.

A detailed description of a lighted road tunnel is given. The size of the lamps used varies from 1,500 watts at the entrances to 200 and 300 watts at the centre. Sudden contrasts are thus avoided. The wattage of the lamps used at any given time depends upon external lighting conditions. Circuit control is made for night, very cloudy day, grey day, and sunshine. Photographs of this and another tunnel in Paris are given. C. A. M.

159. Discharge Lighting in South Lambeth.

El. Times, 91, pp. 517-518, April 15, 1937.

The first part of a complete relighting scheme for Lambeth streets has recently been switched on. There are over 1,000 posts equipped with mercury-discharge lamps, and the results are said to be excellent. Photographs are given. W. R. S.

160. Modern Industrial Lighting.

H. M. Hays. Electric Journal, Vol. 34, No. 4, April, 1937.

An article describing factory lighting practice in America using mercury vapour lamps alone or in conjunction with tungsten filament lamps. R. G. H.

161. Lighting in Mines.

J. G. Garrett. Elect., 118, p. 598, April 30, 1937.

A summary is given of a lecture by the author on the development of lighting in mines. C. A. M.

162. Floodlighting.

E. O. T. Elect., 118, p. 521, April 16, 1937.

A further article is given on the design of a floodlighting installation (see Abstract No. 132 of May, 1937) waste light, coefficient of utilisation, depreciation, and cost are discussed. C. A. M.

163. Early Electrical Illuminations.

Anon. El. Rev., Vol. CXX., No. 3102, p. 686, May 7, 1937.

Describes, with photographs, schemes of shop-front decoration, employing carbon lamps for the Diamond Jubilee celebrations in 1897, and metal filament lamps for the Coronation of King Edward VII. in 1902. R. G. H.

164. Coronation Floodlighting.

Anon. Elect., 118, p. 526, April 16, 1937; Elect., 118, p. 549, April 23, 1937; Elect., 118, pp. 596-600, April 30, 1937; Elect., 118, pp. 610-624, May 7, 1937.

Photographs are given of preliminary floodlighting tests on various buildings in and around London. C. A. M.

165. Coronation Illuminations.

Anon. El. Times, 91, p. 485, April 8, 1937; p. 573, April 22, 1937; p. 609, April 29, 1937.

Photographs and descriptions of various devices and installations for the Coronation celebration. W. R. S.

166. Festive Lighting for the Coronation.

Anon. El. Rev., Vol. CXX., No. 3102, p. 683, May 7, 1937.

Describes a number of Coronation floodlighting installations, and presents photographs of some of the most interesting. R. G. H.

167. The Coronation Festivities.

Anon. El. Rev., Vol. CXX., No. 3103, p. 720, May 14, 1937.

Further descriptions, with photographs, of the Coronation floodlighting installations. R. G. H.

168. Floodlighting the Tower.

Anon. El. Times, 91, pp. 589-590, April 29, 1937.

Photographs and description of the lighting of the Tower of London, with photographs; also an account of the floodlighting of Westminster Abbey. W. R. S.

169. Trial Floodlighting of Windsor Castle.

Anon. El. Times, 91, p. 533, April 15, 1937.

A very successful lighting installation is to be seen at Windsor Castle, where St. George's Chapel, the Norman Tower, and the Round Tower have been floodlit. Photographs are given. W. R. S.

170. Fountain Lighting in Changing Colours.

Anon. Electric Journal, Vol. 34, No. 4, p. 170, April, 1937.

The lighting effects are obtained by reactor dimming control, operated either by a manual master control or by automatic thermionic control. A description of the installation is given. R. G. H.

171. Plan Your Garden Lighting.

C. M. Cutler. Magazine of Light, VI., No. 4, pp. 16-19, April, 1937.

Details of various types of garden lighting equipment are given, together with suggestions for its installation. C. A. M.

Recent Patents

(Abstracts of recent Patents on Illumination & Photometry.)

No. 462,470. "Improvements in and Relating to Electric Discharge Lamps."

The British Thomson-Houston Company, Limited. Dated September 15, 1934. (Convention, U.S.A.)

This specification covers an electric glow discharge vapour lamp having a double walled envelope in which a ballast resistance connected in series across the supply terminals of the lamp is disposed in the space between the two walls of the envelope in such a manner as to surround the inner wall and to heat it substantially uniformly.

No. 462,545. "Improvements in and Relating to Electric Discharge Lamps."

The British Thomson-Houston Company, Limited, and Scott, W. J. Dated September 10, 1935.

According to this specification an electrode of a discharge lamp, particularly a lamp having a filling of metal vapour and rare gas operating on alternating current, comprises a thin coned disc of tungsten, which may be wholly or partly coated or impregnated with electron emitting material. The disc is secured to an axial tungsten wire which projects through the apex, and when the electrode is acting as anode, centres the arc. The coned disc itself functions as a cathode.

No. 462,620. "Improvements in or Relating to Electric Light Fittings."

Fenn, J. J., and The Benjamin Electric, Limited. Dated November 21, 1935.

This specification covers a lighting fitting comprising a reflector which directs light rays into a diffusing member. The diffusing member is in the form of a shovel-shaped glass bowl, the mouth of the shovel constituting an open side to the bowl through which a small proportion of direct illumination will be permitted to light a predetermined area to a higher intensity than the general illumination obtained through the glass of the diffusing shovel-shaped bowl. The fitting is particularly intended for the illumination of the interior of a vehicle and may be disposed so that the diffusing member projects below the ceiling of a vehicle and so that the directly issuing light illuminates a narrow strip, bearing advertisements, on the interior of the vehicle.

No. 462,806. "Improvements in High-Pressure Metal-Vapour Electric Discharge Devices."

The General Electric Company, Limited. (Communicated by Patent Treuhand-Gesellschaft für Elektrische Glühlampen m.b.h.). Dated October 15, 1935. (Divided from No. 459,250).

In an extra high-pressure metal-vapour discharge device the least distance between the electrodes is, according to this specification, not much greater, and may be much less than the least distance between an electrode and the wall and one or more shields embrace the electrodes for conserving the heat of the electrodes, for preventing the incidence of thermal radiation therefrom on the seals of the leading-in wires and for preventing the deposition of sputtered or evaporated material on the walls. The shields must be of refractory material such as quartz, alumina, tungsten, or molybdenum.

No. 462,815. "Improvements in Means for Producing Illumination Resembling Daylight."

The British Thomson-Houston Company, Limited, and The General Electric Company, Limited. Dated December 23, 1935. (Convention, Germany).

This specification describes a "daylight lamp" comprising a discharge lamp emitting the mercury spectrum, preferably the high-pressure spectrum, a discharge lamp emitting the sodium spectrum, a substance which emits red luminescence under radiation from the mercury discharge and a fitting, preferably comprising a reflector, by which the light from the three sources is mixed. Rhodamine may be used for furnishing the red luminescence.

No. 463,304. "Improvements in or Relating to Reflectors."

Galliano, M. A. M. J. Dated September 20, 1934. (Convention, France.)

This specification deals with reflectors of the type incorporating tetrahedra, and the object appears to be to increase the field in which the light is reflected.

The device comprises one or more parts trirectangular tetrahedra produced by drawing three straight lines from the foot of the ternary axis (perpendicular to the base through the apex) of an ordinary trirectangular tetrahedron, one line in each of the three planes containing the ternary axis and one of the inclined edges of the tetrahedron, each at an angle of about 40° to the ternary axis, by drawing a circle through the point at which these three lines meet the faces of the tetrahedron and severing from the main body the portions containing the base edges along planes parallel to the ternary axis and tangential to the circle.

No. 463,309. "Improvements in and Relating to Non-Dazzle Vehicle or Street Lamps or Lanterns."

Naamlooze Vennootschap Machinerieen—En Apparaten Fabriken "Meaf." Dated October 10, 1934. (Convention, Germany.)

This specification covers a projector with a condensing system divided, preferably across a diameter, into two parts, having short but different focal lengths, in combination with an objective lens, having a large focal length. The two-part condensing system may be combined with an auxiliary condensing lens also having short focal length and the condensing system, particularly the half thereof of shorter focal length may be partly screened by a diaphragm which may be translucent. The condensing system is arranged to produce an approximate image of the light-source in the objective lens, and likewise to be in the region of the focus of the objective lens. The objective lens thus images the condensing system, and the beam will be divided into two halves of different intensities corresponding to the focal lengths and light-gathering powers of the two halves of the condensing system.

The Coronation Floodlighting

A Summary of the Discussion following the Annual General Meeting of the Illuminating Engineering Society on May 19th. Illustrated descriptions of leading installations were followed by a critical discussion in which visitors from Overseas took part.

Fig. 1. A night view of St. George's Chapel, Round Tower and Norman Tower at Windsor Castle.

IN the proceedings following the conclusion of formal business at their annual meeting on May 19, the Illuminating Engineering Society made a new departure. Instead of inviting an address from a Continental or American expert, as has been the practice in recent years, they decided that an appropriate course this year was to describe our own Coronation lighting. Accordingly, four members (Mr. R. O. Ackerley, Mr. E. Stroud, Mr. J. G. Clark, and Mr. T. Catten) were commissioned to describe some outstanding installations, whilst Mr. Percy Good, who, it will be recalled, took a leading part in the initiation of floodlighting of our public buildings some years ago, was deputed to present a critical survey of the general effect.

It was naturally only possible to touch on a few out of many excellent installations throughout the country, but supplementary descriptions of others will be found elsewhere in this issue. The introductory remarks led to a keen discussion, of which some account is also given.

The picture above, of St. George's Chapel, Windsor (Fig. 1), was one of those dealt with by Mr. R. O. Ackerley, whose contribution commences on the following page.

Fig. 2. Hampton Court Palace (South Front) floodlighted with a combination of electric discharge lamps, furnishing red light, and tungsten filament lamps.

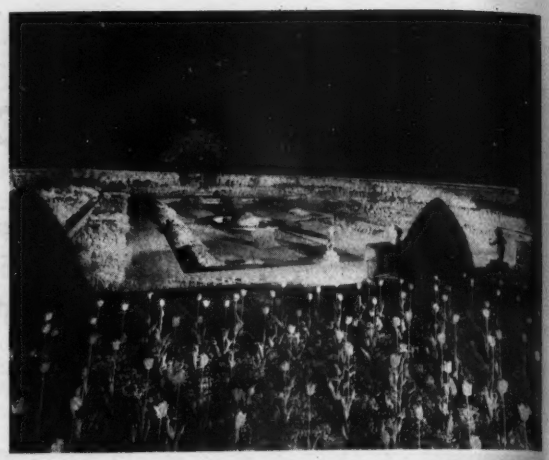


Fig. 3. The Dutch Gardens, Hampton Court, floodlighted with lamps of the line filament type.

Mr. R. O. Ackerley showed and described lantern slides illustrating interesting points in connection with four important installations.

Hampton Court Palace.

The first of these was Hampton Court Palace (Fig. 2). He recalled that prior to the introduction of the electric discharge colour floodlighting lamp, the lighting of red brick buildings had not been very popular, owing to the fact that if white light were used the colour of the brickwork was cold, while colour screens on tungsten floodlights meant an unnecessary expense owing to the high absorption of the screens. When, however, the red colour floodlighting lamp was introduced, the lighting of red brick buildings returned to favour, and these floods exclusively were used for the lighting of the south front of Hampton Court Palace on the occasion of the Jubilee. While this floodlighting was generally considered very effective, it was legitimately criticised on the grounds that it not only showed up the colour of the red brickwork, but that it distorted the colour of the white stone facing. For the Coronation, therefore, it was decided to try to improve upon the Jubilee installation, and a combination of red electric discharge lamps and white tungsten lamps was ultimately used, with a result which approximated very closely to the daylight colour of the building, the red brickwork coming out in its natural warm tone, while the white stone facings contrasted satisfactorily. A comparison between the Jubilee and Coronation effects was shown by means of lantern slides on the screen.

Another slide illustrated the floodlighting of the Dutch garden (Fig. 3), which was carried out by means of two 1,000-watt floodlights of the line filament type, which were extremely effective, provided that the gardens were viewed only from the end from which the floodlights were placed, which, as a matter of fact, was the only position from which the public could view this Dutch garden at Hampton Court. The effect, he added, had been considerably enhanced by the wonderful work done by the staff at Hampton Court in making the garden a blaze of colour.

An Ingenious Water Effect.

The next slide related to some water effects obtained at the Metropolitan Water Board's offices in Rosebery-avenue (Fig. 4), it being pointed out, however, that the photographs did not do justice to the real effect because the water was actually broken up into droplets, instead of being a continuous line as recorded on the photograph. Mr. Ackerley paid a tribute to the hydraulic work involved in this installation, and said the actual effect was that of catherine wheels with showers of golden rain, such as was seen in a firework display. He also drew attention to a striking accidental effect due to specular reflection from the centre of the spirals.

Windsor Castle.

Windsor Castle was then dealt with, and Mr. Ackerley referred to the controversy with regard to the justification of floodlighting architectural features

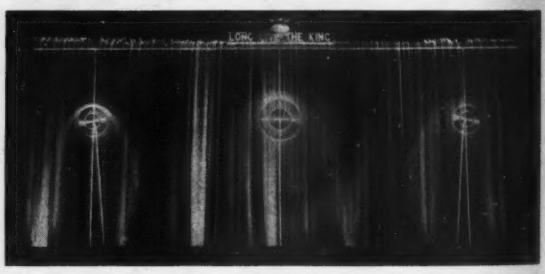


Fig. 4. Water-curtain setting at the Metropolitan Water Board Headquarters, London.

so that the light struck them at a different angle from that obtainable in the daytime. Referring particularly to the clerestory buttresses, Mr. Ackerley expressed the view that the architect who designed St. George's Chapel, Windsor (Figs. 1 and 5), must have been thinking of the building as a work of art in itself, quite independent of whether light came

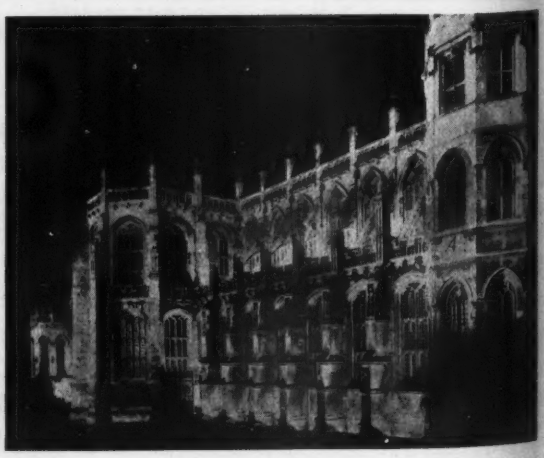


Fig. 5. St. George's Chapel, Windsor. Its glorious architectural features are skilfully revealed by the floodlighting.

Fig. 6. Buckingham Palace, in its mantle of floodlighting for the Coronation.

from above or below. The object of the floodlighting was to bring out the beautiful architectural features, and the system adopted was to put local floodlights between the buttresses and underneath the arches of the clerestory roof with soft general illumination, superimposed by means of floodlights placed on the roofs of buildings some little distance away.

Buckingham Palace.

Finally, Mr. Ackerley showed some slides of Buckingham Palace (Figs. 6 and 7), designed to indicate that in actual practice the shadows thrown by the floodlighting were almost identical with those thrown by the sun at certain times of the day. Mr. Ackerley thanked Mr. Ames for having drawn his attention to a daylight photograph taken in the early morning, at the time of one of the Coronation rehearsals, in which the shadows on the face of the Palace were almost identical with those seen under the floodlighting. Mr. Ackerley showed a lantern slide, in which two views of the Palace building had been cut out of their surroundings and mounted on a single slide, one of the views being a daylight picture and the other a night picture. Had it not been for the silhouetted lanterns in the night picture it would have been almost impossible to distinguish between the two photographs.

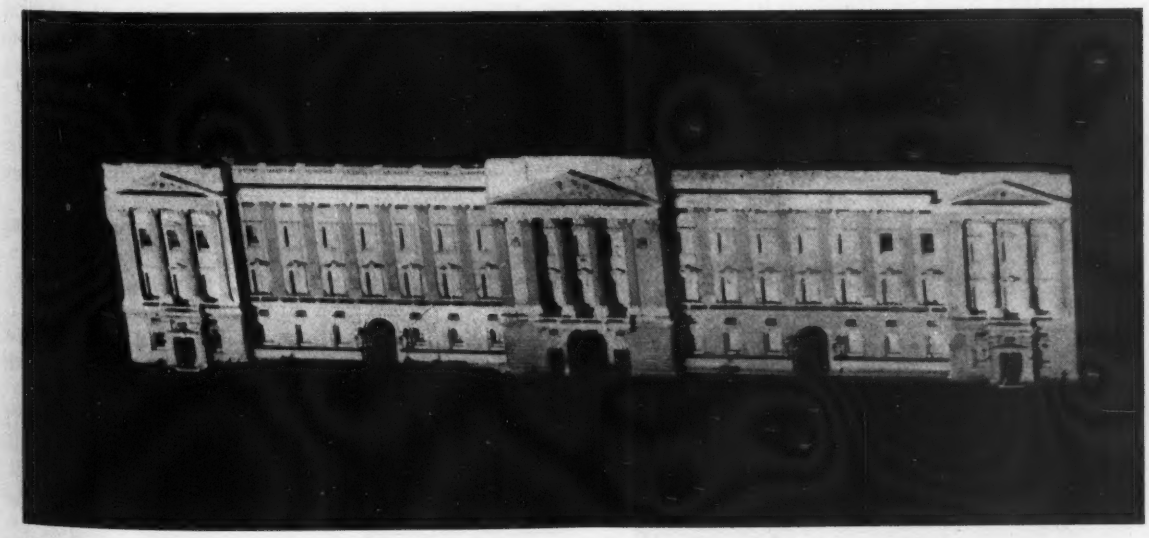


Fig. 7. A dawn view of Buckingham Palace showing shadows cast by the rising sun on the main frontage. (In order to facilitate comparison with Fig. 6 the surroundings are blacked out.)

Westminster Abbey.

Mr. E. Stroud gave some details of the special lighting of Westminster Abbey for the Coronation, explaining that this work was carried out under the direction of the Office of Works Engineers.

Interior Coronation Lighting.

The plan of the Abbey is in the form of a cross laid on the ground. The foot of the cross is towards the west, and forms the nave. The north and south transepts or crosses are at right angles to the nave and the head of the cross towards the east is the Sanctuary and High Altar.

For the Coronation, the north and south aisles of the nave were filled with galleries rising in tiers to above the lower windows. Between these galleries was left a processional walk from the west entrance to the Choir, 17 ft. wide. Similarly, in the north and south transepts were formed a series of galleries rising from the ground level. This seating looked down to the centre of the cross, on which was built a raised dais for the thrones of the King and Queen. East of the dais in the Sanctuary was placed King Edward's Chair, which faced the Altar.

It will be appreciated that as quite a large area of window space had been covered by the side galleries, it was necessary to provide ample artificial illumination, especially as it had been decided that a cinematograph and other photographic records be taken of the ceremony. It was decided by the authorities that the artificial lighting should be concentrated along the processional walk, the whole length of the nave and choir on the central dais, the Coronation Chair, and the Sanctuary.

The nave is very long, some 230 ft., and consists of twelve bays, with moulded arches. A gallery, facing east, fills the first bay. The next seven bays formed the nave. Spanning the ninth bay, separating the nave from the choir is a stone choir screen. The remaining three bays form the Choir.

Above the first row of arches comes the Triforium arcade of two arches to each bay. In each of these arches twenty-two aside, were arranged 500-watt projectors with prismatic spreading lenses, designed to throw a horizontal beam of light along the 17 ft. processional way. These projectors were fixed some 54 ft. above the floor level, and were fitted with special runways, so that they could be drawn in to the side for attention. The illumination obtained at floor level was consistently 18 foot-candles along the length of the nave and the choir.

In the centre of the Cross, to illuminate the dais, were four 1,000-watt concentrating projectors, fixed on the four sides of the Tower, some 100 ft. above floor level, so trained to give the majority of the lighting intensity over the thrones of the King and Queen. The illumination obtained over this area was 15 foot-candles.

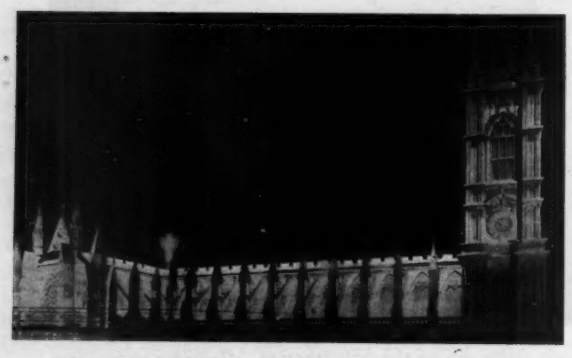


Fig. 9. A view of Abbey North Front and Towers.

Fig. 8. Side view of West Towers.

For the Sanctuary and Altar eight 500-watt projectors, four each side, were used, fixed in the Triforium level, 54 ft. high. One on each side was trained on to the Altar. The remaining three on each side, giving a wider light distribution, served the Sanctuary. The illumination on the Altar and Sanctuary was from 15 to 17.5 foot-candles.

Special arrangements were made to illuminate the actual Coronation Chair. For this two 1,000-watt concentrating projectors were used, similar to those installed in the Tower. These two projectors were fitted forward of the Coronation Chair at a height of about 54 ft., and the beams were trained on to the immediate area surrounding the Chair, and an illumination of over 30 foot-candles was obtained.

The general effect of the lighting scheme was a bright area of lighting from the west door to the Altar, with an increased intensity of about double on the Coronation Chair.

The total number of projectors installed was fifty-eight and the total wattage 32,000.

Exterior Floodlighting.

The exterior floodlighting consisted of the west towers, the annexe, the north clerestory, the north entrance, and Henry VII. Chapel.

The west towers, previously (at the Silver Jubilee) were floodlighted from the roof of the Central Hall. The roof of the annexe, which projected about 110 ft. from the west tower frontage, could conveniently be used for the units.

The floodlighting of the west front of the west towers was carried out by six 1,000-watt wide-angle

flood placed close up for treatment of the lower section, four 1,000-watt more concentrating type served the Triforium section, and three sets of four 1,000-watt long-distance type were applied to the actual towers.

For the north sides of the west towers, eight 1,000-watt long-distance projectors were placed on the roof of the Westminster Hospital. For the east side of the towers, ten 1,000-watt units were placed, five on each side of the roof of the Abbey some 50 ft. or so away from the frontage.

The floodlighting of the annexe was rather a difficult problem, inasmuch as it formed a corner site and there was no vantage position for the projectors. The floodlighting, however, was accomplished by placing floods in four different positions. Six 1,000-watt long-distance floods, four of which were arranged with spreading lenses, were used. Four were placed on the railings on the roof of Westminster Hospital and two were fixed on the roof of the Central Hall. A further two 500-watt wide-angle floods were placed on the frontage to No. 4, The Sanctuary, for dealing with the south side of the annexe, and a further 500-watt flood was fixed on the scaffolding to deal with an extra section on the north side. Two small 200-watt floods were placed on the roof of the annexe for dealing with the north side of the annexe tower. For the north clerestory, west and east of the north entrance, twenty-four 1,000-watt wide-angle floods were used, one in each bay.

Fig. 10. North Front and Rose Window.

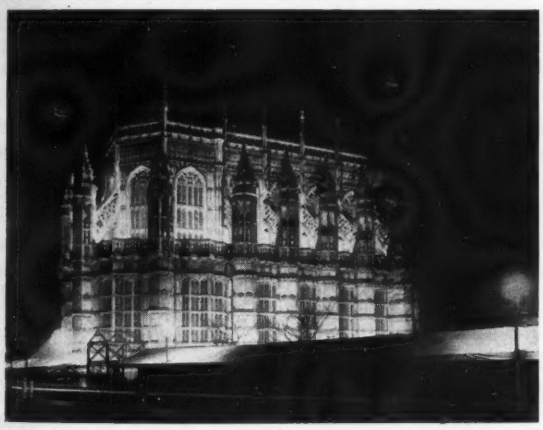


Fig. 11. King Henry the Seventh Chapel.

For the north entrance 10 kW were used, five 1,000-watt projectors being placed on the roof of St. Margaret's Church and five fixed on the scaffolding of the stand built on the Field of Remembrance. This stand was about 70 ft. high, so that the only portion of the Abbey which was visible was the clerestory and the top portion of the north entrance. This being so it was not necessary to floodlight the lower portion of the north side, as was done at the Silver Jubilee.

It only remains to mention the Henry VII. Chapel. Here thirteen 1,000-watt wide-angle floods were used for the clerestory and seventeen on the ground for the lower storey. (Fig 11.)

A total of 117 projectors was used for lighting the whole of the Abbey, and an aggregate power current consumption of 112.9 kW was required.

The Admiralty Arch.

Mr. T. Catten showed illustrations of some of the floodlighting carried out throughout Great Britain. He regretted not having more pictures of installations in the provinces, owing to difficulty in obtaining suitable photographs.

He dealt first with London as the centre of the Empire. One of the first installations dealt with was the Admiralty Arch, in which four batteries, each containing ten narrow-angle beam floodlights, were located in positions on convenient neighbouring buildings, and trained on the two façades, one of which faces The Mall, and the other Trafalgar Square. These projectors were assisted by wide-angle projectors placed in the basement area close to the building surface itself, in order to present a uniformly lighted surface, as well as to introduce some directional quality to the light, and so give relief to the architecture. Some small units were located on the upper cornice to brighten up the portion of the building immediately above it. Gasfilled lamps were entirely used on this installation, the total load being about 55 kW.

Fig. 12. The Admiralty Arch takes on new beauty; floodlighted by means of 72 projectors utilised gasfilled (filament) lamps, and consuming 50 kW. of electricity.

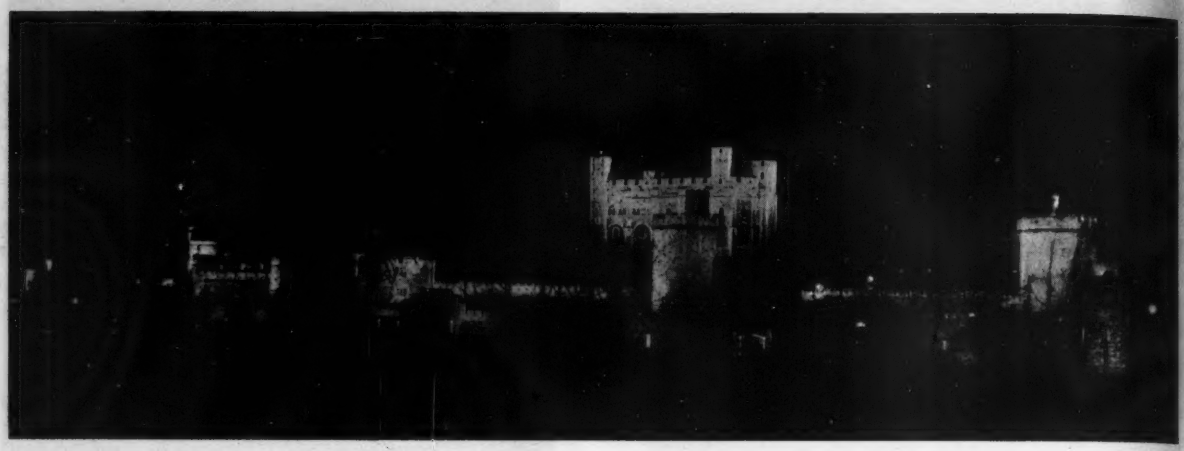


Fig. 13. The Tower of London floodlit. 138 floodlight projectors, using in all 109 kW., were installed for the effective illumination of this smoke-grimed and weatherbeaten building.

The Tower of London.

Mr. Catten described the Tower of London as the first installation, since it was the most dignified focal point of English history and tradition. (Fig. 13.)

In floodlighting the Tower, the objectionable result of floodlighting all the walls to the same intensity was kept well in mind, and the engineers responsible for the installation attempted to grade the apparent brightness of the weather-beaten walls and battlements from a low intensity in the vicinity of the Moat gradually to a high intensity on the Central Tower. This was achieved with no small success, and the White Tower became the part of highest brightness and thus achieved its true position in the architectural scheme. This effect was obtained by the use of concealed groups of concentrated beam projectors, placed at a distance and trained upon the walls of the White Tower.

Special attention was drawn to the manner in which the actual weathering of the Tower was shown up by the floodlighting, and attention was called to the fact that the whole installation was arranged in such a way that new vistas were continually opened before the eyes of anyone walking round the outer confines of the Tower. 138 floodlights, some with narrow-angled beams and some with fan-shaped beams, were used in the installation, the total loading being some 109 kW.

The Horse Guards Parade.

Continuing, Mr. Catten said that, whilst in the case of the two installations previously described entirely gasfilled lamps had been used, the floodlighting of the Horse Guards Parade was carried out by the use of high-pressure mercury vapour lamps. Most of these were located on the Parade Ground itself, being trained to give the desired effect. Very special blue glass colour screens were adopted in this installation, to create a uniformity of colour throughout the whole installation, because of the fact that high-pressure mercury vapour lamps of two types, differing in colour emission, were used. There were some sixty-six floodlights in this installation, with a total load of 23 kW.

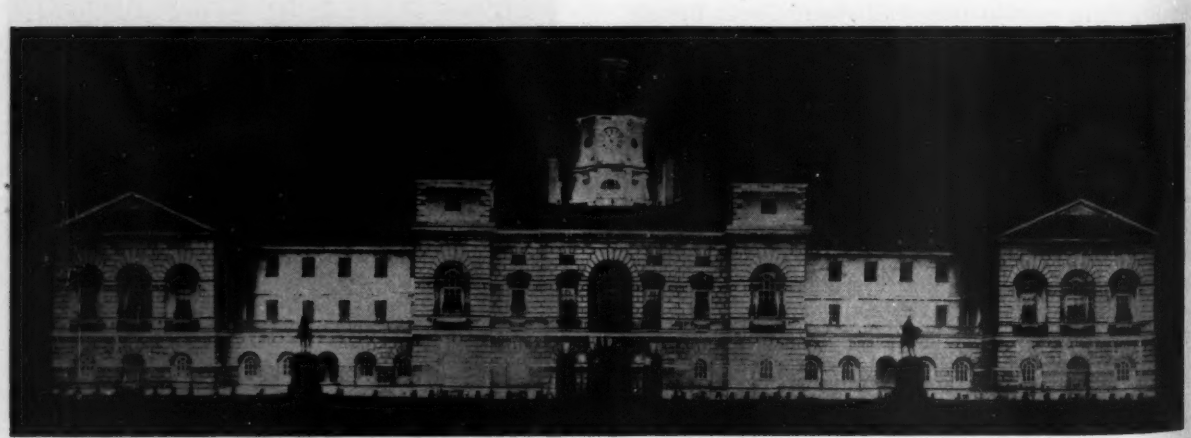


Fig. 14. The Horse Guards, from the Parade Ground, an essay in the spectacular. This building was illuminated by projectors fitted with mercury electric discharge lamps and blue colour screens. The total load was only 23 kW.

Fig. 15. London's County Hall floodlighted. For the façade, mercury electric discharge lamps were used, whilst for the roof and tower lighting, gasfilled (filament) lamps in projectors with red colour screens were adopted. Ninety floodlight projectors, with a total load of 49 kW., were used for this installation.

The County Hall, Westminster.

The County Hall, Westminster, was the next installation illustrated, and it was pointed out that on previous occasions the floodlighting of this building had been done with electric discharge lamps in suitable floodlight projectors, trained on the façade of the building only. For the occasion of the Coronation it was felt desirable to include further portions of the structure, presenting a larger picture to the observer, and the possibility of throwing some light on to the roof was investigated. After considerable experiment with colour screens, etc., the red tiled roof, which had become black due to the deposit of dirt in the past few years, was illuminated in a soft warm glow over the centre portion above the colonnade. This effect was achieved by the use of gas-filled lamps in projectors which gave a narrow beam of light in the vertical plane, but a very wide beam in the horizontal plane, and which were fitted with special flame-tinted glass colour screens. Due to the overlap of the beams of these floodlights, complete apparent uniformity was obtained on the roof, and the soft blending of the pale red tint of the roof with the pale bluish-green of the front façade gave a very attractive effect when viewed from across the river. The whole installation comprised some 100 floodlights, and the total load was 49 kW. (Fig. 15.)

Installations in Glasgow and Birmingham.

Some further slides were shown, including the Glasgow Municipal Buildings, where forty-nine floodlights had been used, having a total load of 55 kW. Mr. Catten apologised for the slide shown, stating that the floodlighting had been almost entirely spoiled by the decorations which had been applied to the front façade of this magnificent building, and said that he hoped that the gentlemen present would see further photographs of this installation, which would be obtained when the exterior decoration had been removed.

Other examples shown were of some gardens in Birmingham, and the speaker concluded by showing a slide of the floodlighting of the upper portion of the ventilating shafts of the Mersey Tunnel, which brought out in an excellent manner the patterns on these upper portions. A very striking effect was obtained when these were reviewed from across the river, and to give an idea of the size of the towers, which was not easily gathered from the lantern slide, it was pointed out that some forty-eight floodlights were used, with a total loading of 43 kW.

Coronation Lighting with Gas

Mr. J. G. Clark dealt with the use of gas for floodlighting and other outdoor illumination purposes, explaining at the same time that he had received a very large number of photographs from different parts of the country relating to various installations.

Those selected for the meeting may be regarded as a cross-section of the many gas installations arranged for the Coronation, and indicate the wide range of interest in this class of lighting. He said he would show lantern slides made from some of the photographs and leave his audience to judge for themselves. Some of these installations related to small jobs, but it was possible to learn lessons from them which would be applicable in larger jobs.

Commenting first on the fact that war memorials had been receiving a large amount of attention, Mr. Clark showed a photograph of the Stockport War Memorial, and said that efficient floodlighting of war memorials should have as one of its objects the rendering legible of the names on the memorial. It sometimes happened when the names were inscribed on polished granite that there were difficulties due to specular reflection which do not arise with unpolished stones.

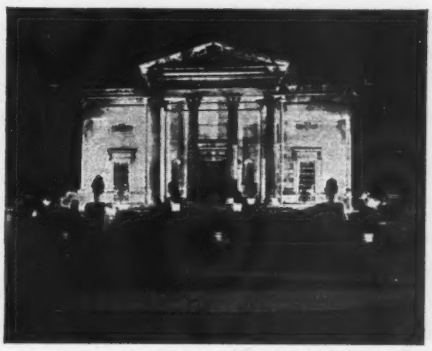


Fig. 16. The Stockport War Memorial building floodlighted by gas.

Fig. 17. Ethelfleda's Mound, Leamington, floodlighted by gas.

Floodlighting in St. James's Park.

There were then shown a number of photographs of floodlighting by gas in various parks, the last of these relating to St. James's Park, where some excellent lighting effects were obtained on the occasion of the Coronation, as at the time of the Jubilee of King George V., by the Gas Light and Coke Company. In one of the flower beds in St. James's Park were 100,000 British-grown tulips, and Mr. Clark

Fig. 18. Devonport Park, Plymouth, illuminated by strip lanterns, each taking ten No. 2 mantles.

said the Park Authorities of His Majesty's Office of Works were to be congratulated on the fact that they had these bulbs in full bloom and in such excellent condition during the Coronation celebrations. For the purpose of the floodlighting there were in all about 250 gas flood-lamps of five different types in St. James's Park, and it was mentioned that the total rate of consumption was twenty-five therms per hour, which Mr. Clark referred to as relatively inexpensive entertainment. (Figs. 20-22.)

Fig. 19. Walsall Aboretum, illuminated by 40 floodlight lamps, each taking ten No. 2 mantles.

Fig. 20. The Lake and surrounding foliage in St. James's Park, with the Horse Guards in the background.

Fig. 21. One of the large beds of tulips floodlighted.

Fig. 22. An attractive corner of the Park in which floodlights are again used with good effect.

These three pictures illustrate the floodlighting of St. James's Park (London). The complete installation included 281 gas lamps (118 parabolic projectors, 85 Vertiflood lamps, 28 strip projectors, 30 spot lights and two 5-light lamps), and consumed 25 therms per hour.

Fig. 23. The War Memorial, Rishton (Accrington).

After showing these pictures of St. James's Park, Mr. Clark illustrated the floodlighting of a number of churches in such places as Stockport, Fowey (Cornwall), and in South London, and followed these with illustrations of the gas floodlighting of Melrose Abbey, the Castle Gateway, Nottingham, and some typical modern buildings. Some of these are here illustrated, and also two other war memorials, at Rishton and Clayton-le-Moor (Accrington). It is understood that Melrose Abbey was floodlighted for the first time during the period of the Coronation festivities.

Fig. 24. The War Memorial, Clayton-le-Moor (Accrington).

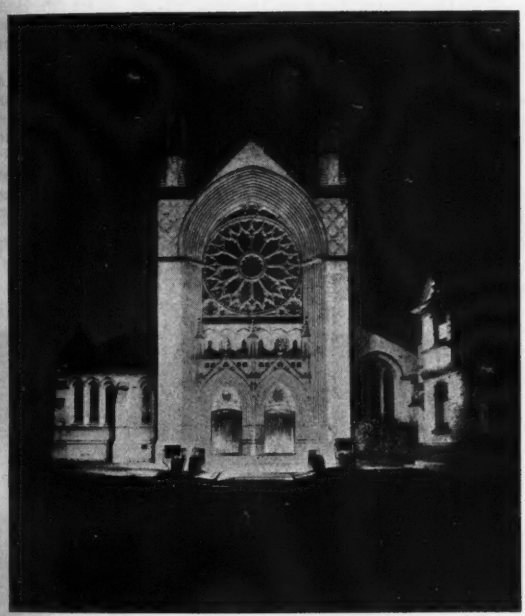


Fig. 25. Church of Our Lady and the Apostles, Shaw Heath, Stockport, illuminated by two upward beam lamps each taking twelve No. 2 mantles, and six lamps each taking four No. 2 mantles.

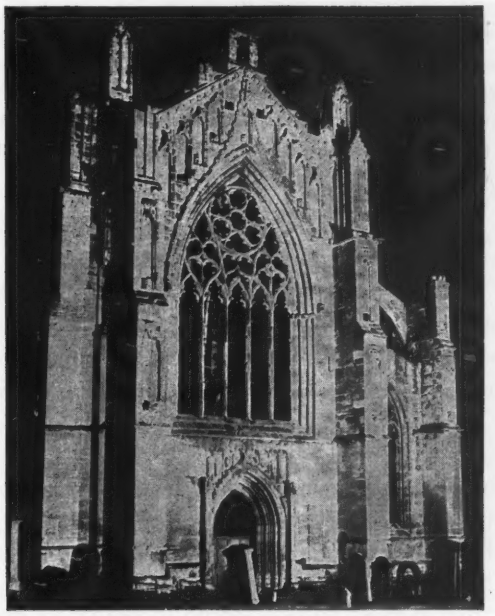


Fig. 26. The South Window, Melrose Abbey, floodlit for the first time by two strip lanterns each taking twelve No. 2 mantles.

Fig. 27. Bear Towers, Warwick Castle.

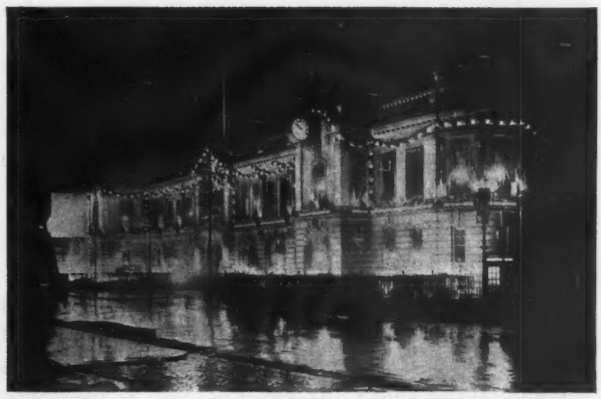


Fig. 28. The Council Chambers, Wallsend, floodlighted by eleven large lamps each taking eighteen No. 2 mantles, and five small lamps each taking eleven No. 2 mantles.

Fig. 29. CALOR GAS FLOODLIGHTING AT GLAMIS CASTLE.

The outstanding floodlighting with Calor Gas is Glamis Castle, the ancestral home of the Queen. The picture shows in a very striking manner the value of this Gas as an illuminant where neither gas nor electric mains are available.

The various facets of Glamis Castle give several hundreds of feet frontage and the lighting was effected in a very excellent manner by seven 12-light, six 10-light, five 3-light and one 2-light floodlighting lamps.

The cost of operating the largest type of lamp used (12-light) is approximately 4 pence per hour with gas of this type.

A New Type of Ornamental Gas Lighting.

Special attention was drawn to the lighting outside the showrooms of the South Metropolitan Gas Company, where ornamental lighting in commemoration of the Coronation was arranged, outlining the façade by means of a series of small mantles on the high-pressure gas system—350 in all, and consuming a little more than two therms per hour—arranged in such a way that the whole system could be said to be one burner with a number of nozzles. The individual nozzles corresponding to the small mantles were close to each other and gave a continuous line effect. The mantles will bear exposure to all weathers without the use of any protective glassware. This installation, said Mr. Clark, is typical of what had been done in a number of other instances. Another installation of a similar character illustrated was the Mill Bridge, Leamington. Here the Leamington Priors Gas Company outlined the structure of a bridge by some 2,000 star jets, each giving six separate jets of flame. In this case, however, no mantles were used, but the effect was quite spectacular.

Floodlighting with Calor Gas.

Other slides represented the floodlighting by gas of private houses, and the final slide was of Glamis Castle, the ancestral home of Her Majesty the Queen. In this case Calor gas was used, as there was no public supply of gas available. There were many other similar installations of Calor gas.

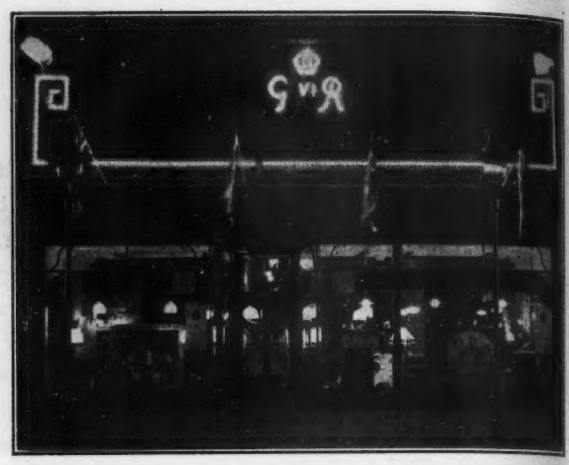


Fig. 30. CORONATION DECORATIONS OUTSIDE ONE OF THE SHOWROOMS OF THE SOUTH METROPOLITAN GAS COMPANY

A New Type of Ornamental Gas Lighting.

The essential feature of this device is the combination of high pressure gas with an unusual type of gas mantle which may be used without protection from the weather.

The simplification which results from dispensing with glassware makes possible brilliant sign and decorative effects in a variety of forms.

Gas, at a pressure of approximately 80 in. w.g., is supplied to an ejector at the end of a burner tube, which may be made in any desired shape. The tube is fitted with a row of burner nozzles, and on each nozzle is screwed a special gas mantle, requiring 1 c. ft. of gas per hour.

The mantles are supplied in the unburned condition and are strengthened to withstand severe treatment. When first lighted each mantle shrinks rapidly into a small hemispherical source of light of great brilliancy.

The cost of these mantles is low and they are constructed to withstand all normal conditions of weather.

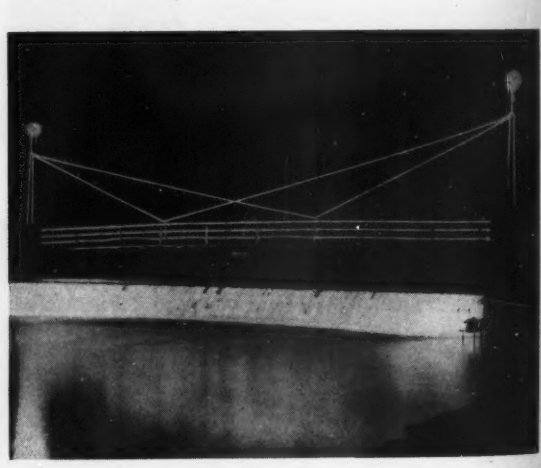


Fig. 31. The ingenious decorative lighting with gas jets of the Suspension Bridge over the Loam Waterfall, Leamington.

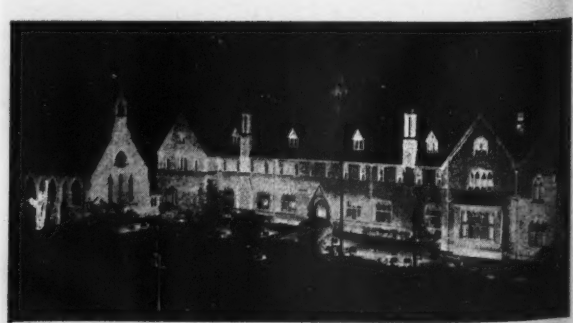


Fig. 32. St. Luke's College, Exeter, illuminated by 33 strip lamps (28 with a horizontal beam and 5 with upward beam), each using ten No. 2 mantles; six similar horizontal beam strip lamps each using twelve No. 2 mantles, and three parabolic lamps each using ten No. 2 mantles were also provided.

A Critical Survey.

Mr. Percy Good, who next addressed the meeting, had been invited to contribute a critical survey of the Coronation floodlighting, and he made interesting comments on some of the installations previously described.

Mr Percy Good said he felt it was necessary for the members of the Society to sit back and look at what had been done in order to learn as many lessons as possible, and for that reason they should say quite plainly what they thought. At the same time, he appreciated that in criticising any particular installation there was the danger of conveying the wrong impression on account of the circumstances in each case. For instance, there were installations in which the lighting engineers had been strictly limited by price, and there were other cases, such as Westminster Abbey, when he wondered why the lighting engineers had not thrown up their hands in despair. The method of lighting the West Front by projectors placed below the towers was a great improvement, made possible this time by the existence of the annexe. Therefore, he wished to make it clear that in any criticisms he might make he was referring to the effects obtained and was not criticising any individual or firm who might have been influenced by circumstances over which they had no control.

Collective Action Needed.

Having been round the London floodlighting several times, both during the rehearsals and afterwards, Mr. Good said he had come to the conclusion that efforts should be made to secure more collective action in the future. Many of the spasmodic efforts had practically been wasted, and would almost have been better left out altogether; for example, the Salvation Army offices in Queen Victoria-street. On the other hand, the Institution of Civil Engineers was a good example of skilful and effective lighting, and the building was located where the effect could be seen well, and was near other examples. Another case where a collective effort should have been made was in the City, near the Royal Exchange, Mansion House and Bank of England. The money spent on individual efforts, devoted to some collective scheme in the neighbourhood, would, in general, give far more effective results.

Referring to some of the pictures which had been shown, he said he felt Mr. Ackerley was right in suggesting that the floodlighting of St. George's Chapel at Windsor achieved something very near to what the architect himself was thinking when he designed it, and that he was not thinking in terms of sunlight or anything else. Sitting for some time looking at it one felt that here was the architect's conception in all its majesty.

The floodlighting of the Tower of London deserved high commendation, and if there was one blemish it was the very bright gateway, which detracted very much from the view from the river. Fortunately, it was not so apparent from the riverside, as it was left behind as one went down the path. It was interesting to note the successful effort to obtain depth by raising the intensity of the more distant building. It is doubtful if this is a universal rule.

Colour Effects Undesirable for Historic Buildings.

Referring to the Horse Guards Parade and to the London County Hall, Mr. Good criticised the use of the coloured lighting in these particular instances. The buildings on the Horse Guards Parade, he said, were one of our most valued monuments. The manner in which it was lighted prevented any manifestation of the characteristics of the buildings. It was necessary in floodlighting to treat such a building with reverence and to bring out its characteristics, but that could not be done with anything approaching monochromatic light.

The manner in which Hampton Court had been treated was a great improvement over the previous occasion, due to the use of some white light, but he believed it would be still better if the red were obtained with a screen which left a wider spectrum band than a neon flood. He might, however, be wrong in that, because it was not easy to say definitely without making experiments. The lighting of the I.E.E. building on Victoria Embankment showed a good result of the use of a colour screen on a red brick building.

An installation which had not been mentioned was the Royal Naval College, Greenwich, and the results there were excellent. It was here, under one of the colonnades, that the I.C.I. had had a banquet. Mr. Good expressed his regret at the parsimonious treatment of the Bank of England—the layout of that building lent itself to good floodlighting. He remarked that where money was the primary consideration good lighting generally suffered.

Speaking of street effects, Mr. Good said that in his view Bond-street provided a decoration more suitable for a christening or a wedding, but it was inappropriate for a Coronation. It required more colour, and at night it was possible to see street signs, etc., through the banners, and, further, the light sources used for floodlighting the banners were visible all the way down and spoiled the effect. However, he imagined that price dominated this scheme too. The same money spent on half the street might have been successful.

In Regent-street there were gas flares which, in his view, were one of the most attractive forms of gala lighting. He remarked that St. James's-square, from this point of view, was well worth visiting on the King's birthday, but to have the gas flares underneath a powerful street lamp as in Regent-street was a waste. There had been no collective effort in Regent-street, however, and on the whole it was a very dull street from the lighting point of view, although the effort of Austin Reed's to provide yellow windows brought a little cheerfulness to it.

The daylight decorative scheme of the Mall was magnificent but a grand opportunity was lost here for floodlighting. Had stands not been erected along the Mall—and the procession did not in any way justify them—and had floodlighting been made use of, he felt there would have been one of the finest spectacles imaginable. Further, without the stands and by raising the roadway a foot or eighteen inches, vast crowds could have seen the Royal Family and the other people in comfort and a more democratic welcome have been offered to the King and Queen.

Floodlighting Equipment should be hidden.

Speaking of Buckingham Palace and the Horse Guards Parade again, Mr. Good said it should be possible to make arrangements so that there was not so much gear littering the place. Why should it not be placed in a trench with a manhole cover type of iron top carrying the equipment, the latter being lifted when the floodlighting was required. St. James's Park was also cumbered with gear which ought to be hidden. This lighting should be permanent and then it could be arranged properly. He described how appropriate fittings in Birdcage Walk could be permanent without being an eyesore, and used when the flowers warranted it.

In Hanover-square it was not possible to escape seeing one or more of the projectors no matter where one stood, but that was avoided in the Dutch Garden at Hampton Court because the public were not allowed to go all round. It seemed to him, said Mr. Good, that it was necessary somehow to secure the use of garden ornaments to hold the lights as well as specially placed bushes.

Commenting on certain photographs of floodlighting, it was suggested by Mr. Good that some of them would frighten away any person of taste. Some photographs were really not good enough and did not do justice to the effects obtained.

Speaking of decorative lighting by gas, Mr. Good said that he had a great hankering after the small

Fig. 33. The Royal Naval College, Greenwich, the floodlighting of which was briefly described by Mr. E. C. R. Porter. Some idea of the magnitude of the scheme can be gained from the fact that this photograph was taken from the other side of the River.

Courtesy : The Electrical Review.

gas jets which had been mentioned, for they were extraordinarily effective.

With regard to decorative schemes in general, Mr. Good expressed the view that the City decorations were successful partly because the designer had stressed the red and white and made the blue subservient. They were, in his opinion, much finer than the jesters' staffs with cardboard crown (not always straight) adopted by Westminster, where, however, the wider streets made the problem more difficult. Greater attention should be paid on any future occasion to the lighting of the street decorations.

Permanent Lighting for National Buildings.

Mr. Good, regretting there was not more time to mention other jobs, said in conclusion that efforts should be made for the permanent floodlighting equipment for St Paul's, Clock Tower, the Tower of London, and the Horse Guards Parade to be used much more frequently. St. Paul's and Big Ben should always be on, and the others perhaps on Saturdays and Sundays.

Discussion

Although the time available for discussion, following the detailed contributions summarised above, was somewhat limited, good use was made of the opportunity, a feature being the contributions from several visitors from overseas.

Mr. E. C. R. Porter showed several slides illustrating the floodlighting of the Royal Naval College, Greenwich, which had been mentioned earlier by Mr. Good. This installation, illustrated above, is a relatively large one for which approximately 120 kW. was required. Mr. Good remarked that whilst the effect was good even with the lighting in the roads of the College grounds, it was very much intensified when the ordinary road lighting was extinguished—a comment which would no doubt apply to other floodlighting installations, and is in some degree a reproach to existing methods of street lighting.

Mr. R. S. Botsford, who conveyed greetings from Canada to illuminating engineers in Great Britain, said that he had personally been much pleased with the floodlighting, and had no criticism to make. Later, however, in referring to public lighting in general he commented on the amount of red light exhibited in the form of advertising signs, which seemed liable to cause some confusion with street traffic signals. This point was taken up by Mr. Good, who remarked that the Minister of Transport had the power to require the removal of any lights which tended to interfere with traffic signals. Hitherto, however, he had been considerate and had not made use of these powers. In actual fact there was usually such a variety of colours associated with such supplementary lighting that there was not so much danger of confusion as might at first sight be supposed.

Perhaps the most informative contribution to the discussion was that of Mr. J. H. Dupin (New Zealand), who described the permanent floodlighting equipment for the War Memorial at Auckland. He explained that ten lighting units were employed for the purpose. The floodlights were enclosed in frosted glass globes on concrete columns 25 ft. high, each globe containing three lamps. The sides of the globes facing the War Memorial were open, and enabled the 250-ft frontage of the Memorial to be floodlighted. At the same time a Cenotaph on the other side of the lamp standards was revealed in silhouette. The effect could be seen 15 miles away.

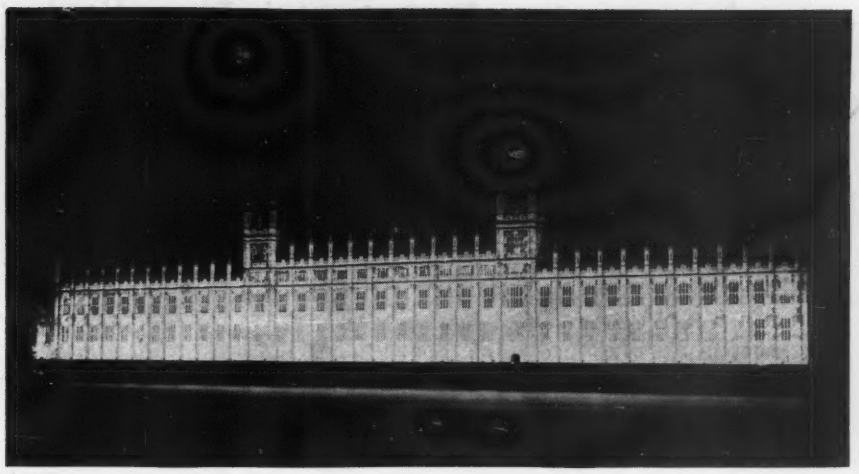
Mr. Dupin also mentioned that in Wellington the Houses of Parliament were externally illuminated by electric discharge lamps, as also were the railway stations, the main post offices and the Government residences in all the four centres in New Zealand. The post offices in the smaller towns were lighted with festoons of ordinary gasfilled lamps. Considering the size of the country a large sum of money had been spent on Coronation decorations. Moreover, every effort had been made to ensure, by means of specific regulations, uniformity of effect.

Mr. Dupin also gave some information with regard to the lighting of the railway station at Auckland, which had cost £365,000. Some of the fittings were of an elaborate nature, and consisted of large and small spheres mounted together. In some rooms an illumination as high as 50 foot-candles was to be found. In the dining rooms chandeliers which combined the functions of lighting and ventilation units had been installed—but he added that the effect to combine these functions had not been entirely happy. For the lighting of the station buildings huge bronze brackets were used, and during the Coronation period the front was illuminated by means of electric discharge lamps.

The President, in winding up the discussion, suggested that on some future occasion an evening might well be devoted to the discussion of the aesthetic aspects of floodlighting.

ACKNOWLEDGMENTS

We desire to make special acknowledgment of the courtesy of The General Electric Co., Ltd., Holophane Ltd., The British Thomson-Houston Co. Ltd., and the British Commercial Gas Association, in furnishing the illustrations accompanying the contributions of Mr. R. O. Ackerley, Mr. E. Stroud, Mr. T. Catten and Mr. J. G. Clark which appear in the preceding pages (pp. 157-166).



The Terrace of the Houses of Parliament, floodlighted by Siemens Electric Lamps and Supplies Ltd. in conjunction with H.M. Office of Works, utilised twenty 1500 W. lamps in wide angle floodlights and two 500 W. lamps in medium angle fittings, mounted on the wall of the Terrace. We have already given, (April, p. 122), a list of other important Siemens installations.

Some other Outstanding Floodlighting Installations

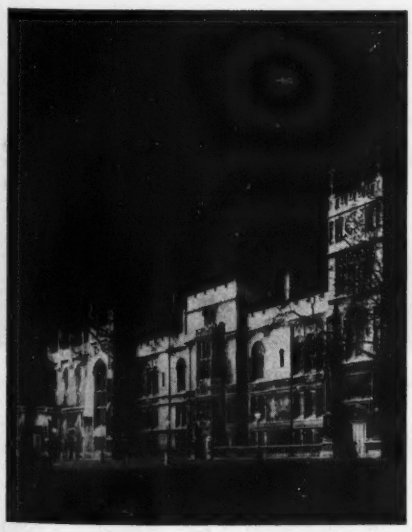
Floodlighting for the Coronation festivities was on an unprecedented scale and remarkably widespread. There can have been few towns or villages that did not make some effort.

In the preceding pages descriptive accounts are given a number of outstanding electrical installations, for which the General Electric Co., Ltd., Holophane, Ltd., and the British Thomson-Houston Co., Ltd., were responsible. In what follows we illustrate a number of other installiations, some of considerable interest, since brought to our notice. Even so, there remains some other installations of which particulars have just reached us (Trafalgar-square, Celanese House, etc.,) with which we hope to deal next month.

We are also indebted to the British Electrical Development Association for data on the typical activities of some forty towns and cities, which reveal interesting variation in method. In important cities the town halls, cathedrals, and churches, and other buildings of local interest were usually illuminated, and in some cases a distinctive note, associated with local industries, was struck. At Birkenhead, for instance, the ferries and landing stages and two ferry steamers were illuminated, and at Portsmouth an illuminated ship outside the Guildhall was a novel feature. The Castle at Edinburgh, once more floodlighted, retains its pre-eminence for its unique position—ideal as a subject for floodlighting. In many cases where parks and public gardens were available (e.g., in Birmingham, Croydon, Lincoln, and Teignmouth) festive lighting was contrived, whilst seaside places developed their habitual illuminations more strongly than ever. Outstanding in this respect were Blackpool with its five miles of promenade, in red, white and blue; Bournemouth, with its scheme of colour lighting for the Undercliff Drive; and Brighton, with a mile of neon lighting along the sea-front and a floodlit chain of Union Jacks along the King's Road.

A prudent course was followed in Halifax, where the allotted expenditure was applied to a permanent scheme of improved public lighting; and Crewkerne, which installed electric lighting in the almshouses as a Coronation memorial.

Mr. J. G. Clark's well-illustrated contribution before the Illuminating Engineering Society (pp. 163-166) shows similar variety in gas lighting installations. Other data before us, to which we hope to deal in our next issue, relate to effective gas lighting in Nottingham, Kendal, and elsewhere.



The Inner Temple, London, illuminated by GEC floodlights and Osram lamps. Total load: 16 kW.

Nottingham Castle Gateway floodlighted by gas.

Some Interesting Provincial Floodlighting Installations

Dunfermline Abbey floodlighted.

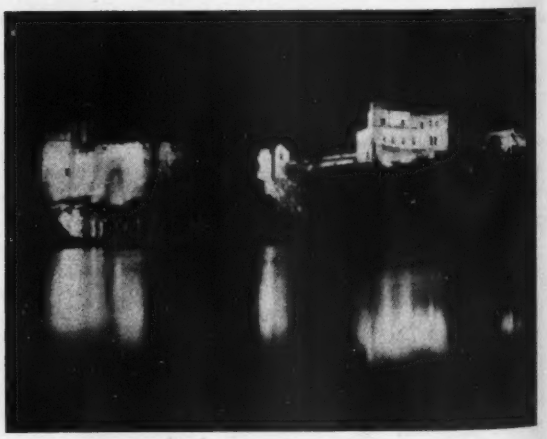
The floodlighting of the northern and western façades of this venerable building presented great difficulties to the staff of the Fife Electric Power Company, owing to the very low reflective value of the aged sandstone fabric. Success was attained by the selection of sodium lamps, the golden-coloured light of which was well suited to the material illuminated. Thirty-one "Philora" sodium lamps (twenty-three of 150 watts and eight of 10 watts) in units specially designed by the Revo Electric Company, Ltd., were used. The scheme consumed 4½ units per hour. This is believed to be the largest scheme of sodium floodlighting yet carried out in Great Britain.

The Gardens of Longford Hall, Stretford, Manchester.

We are indebted to Metropolitan-Vickers Electrical Company, Ltd., for particulars of this illuminated garden. The background of poplar trees was lighted by a series of 400-watt horizontal electric discharge lamps placed near the base of the trees and focused crossways. The tulip bed and rock garden were lighted by a new fitting, a 22-in. diam. enamelled steel reflector fitted with two lamp-holders, each fitted with a 150-watt Cosmos daylight lamp. This arrangement, which proved very suitable for this case, was mounted on a telescopic stand adjustable to suit the size of the flower bed.

Spectacular lighting at Cannon Hill Park, Birmingham.

Offices of the Rugby Portland Cement Company floodlighted.



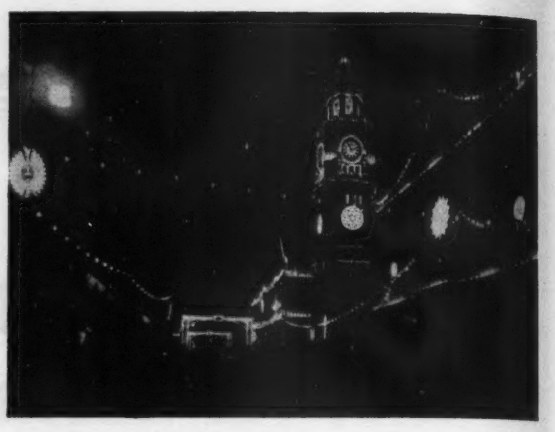
Chepstow Castle, floodlighted for the Coronation.

The three above installations were carried out with B.T.H. equipment: that in Cannon Hill, Birmingham, by the Birmingham Corporation Electricity Department. For this and the subsequent installation B.T.H. Mazdalux Floodlight Projectors were used. Mazda Mercra lamps in projectors were used to illuminate Chepstow Castle.

"Croydon's Fairyland Park"

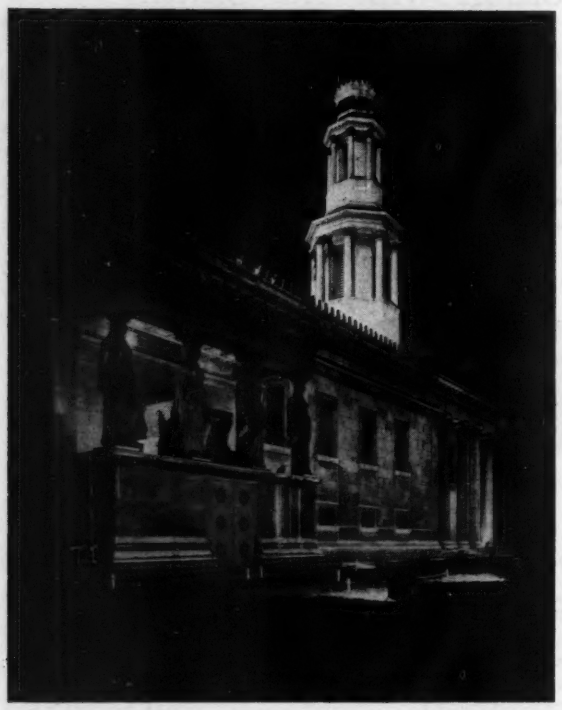
The Coronation decorative lighting scheme in Croydon excited great public interest. The streets, public gardens, and parks were gay with coloured lights. Altogether over 25,000 lamps and 12 miles of striplights were supplied by Messrs. Crompton Parkinson, Ltd., for this scheme—perhaps the most widely noticed of the many carried out by the firm during the Coronation period. The Town Hall where—in the words of the *Sunday Express*—"the tower pointed a miraculously beautiful finger of light at air liners passing overhead," was festooned with lights picking out the architectural features of the building.

In Grange Park moving signs caused much amusement to children and grown-ups alike. Decorative features—illuminated gondolas, swans, and parrots—were the main attraction in Wandle Park, whilst in Raynes Park there were giant illuminated flowers. The flower beds in all the parks were floodlit and ingenious use was made of artificial flowers arranged on the lighting fixtures.



Croydon Town Hall, decorated for the Coronation celebrations.

St. Pancras Church, London



At St. Pancras Church, London, the whole of the tower and the north and west sides were illuminated. For the tower sixteen 1,000-watt concentrating type floodlights were used, placed so as to give an even distribution of light on all sides. The north side of the church was illuminated by nine wide-angled type floodlights, utilising 1,000-watt lamps in each, whilst the extremely high portico utilised eight 1,000-watt wide-angled floodlights. Special attention was paid to the production of effective contrasts, the tower itself being brilliantly illuminated, whilst the lower sides of the building were bathed in a softer light. The floodlighting in the portico brought out the stone relief work around the doorways, and at the same time threw the pillars into silhouette. The installation was designed and arranged in conjunction with the borough electrical engineer of St. Pancras, Mr. Robert Lee, all fittings being provided by Messrs. Crompton Parkinson, Ltd.

Coronation "Bonfires"

The effect which excited much comment was the pair of special bonfires erected on the roof of the Shell-Mex building in the Strand. These two bonfires, each some 30 ft. in height, were made to flame, flicker, and smoke with the greatest realism—so much so that the Fire Brigade turned out the evening when they were first switched on, to extinguish what appeared to be two highly dangerous conflagrations! It was only after they had been conducted to the roof of the building to see how the effects were produced that they were convinced they could safely go home.

A view of one of the odd artificial bonfires, situated on the roof of the Shell-Mex Building in the Strand (London).

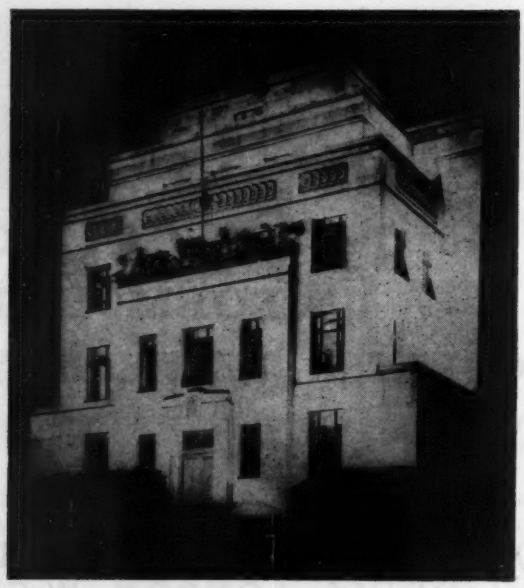
Another current belief was that Shell petrol was actually used to make the blaze. In point of fact, about 24 floodlights were used, and special flickering devices were designed and manufactured by the Strand Electric and Engineering Company, Ltd., for the occasion, while steam formed the "smoke" which belched forth from the sides and top. A tribute was paid to the ingenuity of the Strand Electric by an American visitor, who placed inquiries for the reproduction of the effect in the States.

The Sailors' Orphan Girls' School and Home, Hampstead, floodlighted by Holophane projectors.

Floodlighting in the Suburbs

These three pictures are included as typical examples of the lighting of public buildings, etc., in London and the suburbs. In all cases good effects were achieved by relatively simple means. Whilst it is natural that public attention should be directed mainly to the more spectacular installations—such as that carried out by Holophane, Ltd., in connection with Westminster Abbey, for example—the immense amount of work put into installations of the character here illustrated should not be forgotten.

The Duchy of Lancaster Building



A view of the Duchy of Lancaster building illuminated by Floodlighting and Fittings, Ltd.

Floodlighting the Royal Mint

We are indebted to Messrs. Siemens Electric Lamps and Supplies, Ltd., for the above picture, illustrating the floodlighting of the Royal Mint, Tower Hill. For this installation 1,000-watt gas-filled lamps were used, six being mounted in wide-angle floodlights spaced evenly along the front of the building and four in narrow beam units, which were placed opposite the centre of the building and used to light the columns and pediment.

Women's Interest in Lighting

Our attention has been called to a little oversight in the note on the above subject in our last issue (p. 133). We understand that Miss E. L. Lee, like Miss Noakes a member of the Illuminating Engineering Society, shared with her the task of arranging this useful meeting.

Celebrations at Portsmouth

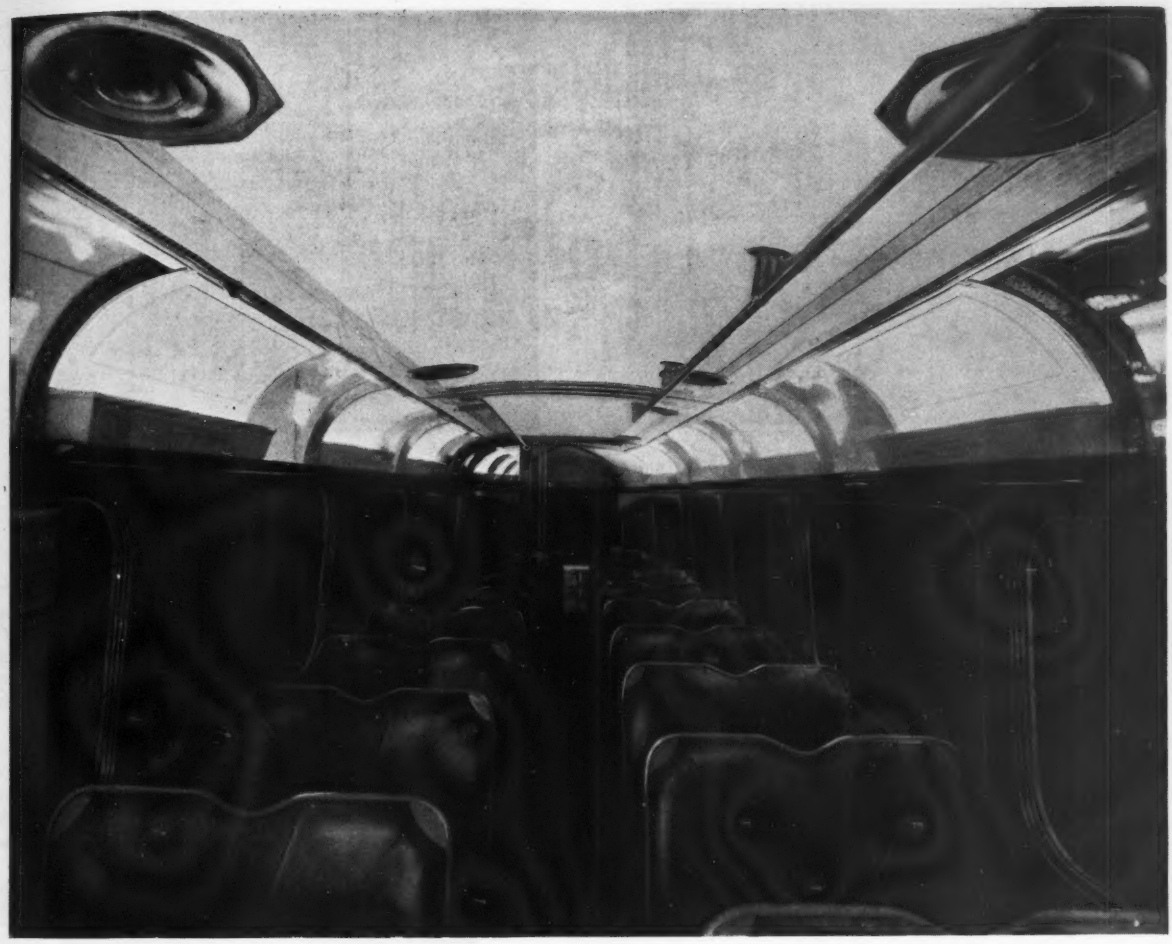
Illuminated Trolley Bus bears Loyal Motto

A feature at Portsmouth during the Naval Review celebrations was the illuminated trolley bus, bearing the words "God Bless Their Majesties," for which more than 2,000 Siemens traction type lamps were used. We reproduce below a picture of this effective device, on which the City of Portsmouth are to be congratulated.

A Pleasing Silhouette Effect

Floodlighting of University College (Gower-street, London).

We are indebted to Messrs. The Simplex Electric Co., Ltd., for the accompanying illustration, which shows a pleasing view of University College (Gower-street, London), floodlighted during the Coronation festivities. The building is one that lends itself well to floodlighting, a feature being the manner in which the columns stand out, silhouetted against the brighter background. This is a method which might well be more generally pursued with exteriors of this type.



Better Light for Passenger Vehicles

Although the advantages of indirect lighting are now generally admitted, it is only recently that a serious effort has been made to apply it to passenger vehicles. The success of the G.V.D. installation in Glasgow's new experimental tram car proves that indirect lighting for vehicles is now a practical proposition.

As will be seen from the above photograph, the source of light is not directly visible. The light itself is diffused and evenly distributed. Passengers and conductor may turn their eyes in any direction without risk of dazzle or eyestrain.

Good indirect lighting almost entirely eliminates shadows; the passenger may read in comfort in any position and is not disturbed by the shadows of others passing to and fro.

The usual direct lighting presents a series of spots of high intensity light, usually at low level, which distract and make the rest of the interior seem dull by comparison. The eye, in trying to adjust itself to varying intensities of light, becomes tired and strained, and the trouble often is aggravated in electrically driven tram cars by fluctuating current supply; such fluctuation is much less noticeable and trying when the source of light is obscured.

The installation of indirect lighting in vehicles is complicated by several factors, notably the lowness of the ceiling and comparatively large window space. Such problems can, however, be solved by means of scientifically devised units, and well diffused light of ample intensity may be provided at moderate cost.

In the car illustrated there are ten G.V.D. indirect reflectors, each containing two 60-watt lamps. The intensity is 6½ ft. candles over the whole area. The current consumption is remarkably low for indirect lighting of this intensity, and no higher than is used on new cars with direct lighting.

Mr. G. V. Downer will be pleased to discuss lighting schemes for passenger vehicles or any other specialised purpose. Enquiries are invited.

Fig. 1. A view of the Hall, showing a recessed pillar light, and the ceiling panels of obscured glass.

Fig. 2. Panels of glass recessed into the archway, and a tubular lamp to illuminate the curtains provide attractive lighting for this window recess.

The Lighting of the King's House

By Dora M. Noakes

The house which was built for the late King by the Royal Warrant Holders is situated on the delightful Burhill Estate, Surrey, commanding a view of the golf links. Approaching the house after dark, one is welcomed by the light from two small lanterns on the gate posts. There is a paved courtyard leading to the solid oak front door, but no light actually over the door. On entering the house there is an enclosed ceiling fitting, in the small lobby.

HALL.

The hall is an unusual shape, in that immediately facing one, after having entered the house, there is an archway with two steps down, through which one passes for the lounge on the left, the dining room on the right, or the glass doors leading to the garden terrace. There are etched glass panels on each side of the arch, which are softly illuminated from tubular lamps. The section of the hall leading to the garden is illuminated by a series of frosted glass panels recessed into each side of the ceiling close to the wall.

DINING ROOM.

Here the lighting is dignified and admirably suited to the style of the room. There is a glass trough suspended over the long dining table, which gives indirect light with the exception of the provision of a series of holes in the base of the fitting which allow some direct light to fall on to the dining table. The accompanying illustration shows the attractive lighting of the flowers on the mantelshelf. Long velvet window curtains are lighted by tubular lamps placed behind the pelmets.

LOUNGE.

The lounge, which is a comparatively small room, is lighted entirely from two floor standards; the lighting in the window recess consists of lamps behind three obscured glass panels and some local lighting on the window curtains on the right-hand wall.

Every room in the house is provided with an electric clock, which in many cases is illuminated, as, for example, the one over the fireplace in the dining room, which, incidentally, is fixed to the grille of the wireless loud-speaker (Fig. 5).

BEDROOMS.

The illustration of the dressing table (Fig. 4) illuminated by tubular lamp standards shows a portion of the principal bedroom. This room has local lighting in the built-in hanging cupboards, provided by tubular lamps placed just inside the cupboard door. The top portion of the bedroom curtains is illuminated by tubular lamps fixed behind the pelmet. There is nothing of special note in the lighting of the rest of this room, the bedhead lighting being provided by means of small table standards on each side of twin beds.

The accompanying illustration shows the attractive lighting of the fireplace in one of the guest rooms. The lighting surrounding the electric fire is a soft blue and yellow colour. The vase stands on a luminous glass panel which is recessed into the

Fig. 3. Blue and yellow lamps are cunningly concealed behind the electric fire so that either a warm or cool effect can be obtained from the light coloured surround. The white linen flowers are illuminated by a blue lamp placed inside the vase.

mantelpiece, there being in addition a blue lamp inside the vase which illuminates the white linen flowers.

After viewing the lighting of the King's House at Burhill, one was left with the impression that there were many excellent ideas, some of which might have been executed rather better. It seemed, too, that some attempt might well have been made to floodlight the garden, especially as there was a garden room at one end of the terrace, which would obviously be used on summer evenings.

The illustrations give examples of some of the most attractive lighting effects.

E.A.W. Session in Paris

An enterprising step taken by the Electrical Association for Women is the organisation of a visit to Paris during June 25-29. A Women's Session has been arranged in connection with the International Congress on Lighting Applications. Papers are to be presented by Miss Caroline Haslett (Great Britain), Miss Andree Trolliet (Switzerland), Misses Lilian Eddy, Helen G. Mackinley, and Mary E. Webber (U.S.A.), and Miss Colette Gueden (France), dealing with women's work in the lighting field. Those wishing to join the party should apply at once to the Electrical Association for Women (20, Regent-street, London, S.W.1.)

The Lighting of the King's House

(continued from p. 178).

Fig. 4. *(Left).* The curtains are lighted at the top from tubular lamps concealed behind the pelmet.

Fig. 5. *(Right).* A panel illuminates the clock and flowers on the mantel-shelf, which are also illuminated from below.

TRADE NOTES AND NEWS

Crompton Parkinson, Ltd., Join the E.L.M.A.

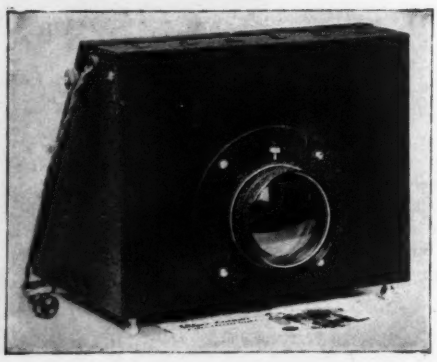
An important announcement early in the past month recorded that Crompton Parkinson, Ltd., have now become members of the Electric Lamp Manufacturers' Association. From May 1 onwards, Crompton and Kye lamps have been marketed in accordance with the agreed policy and conditions of sale of the association. A leaflet before us confirming the announcement also contains particulars of standard Crompton gas-filled lamps, as well as some special varieties (tram, traction, colour sprayed, candle lamps, etc.).

Display Searchlights

When so much is being said about the use of filament and electric discharge lamps for floodlighting during the Coronation festivities—an older and traditional form of display—by means of searchlights —should not be forgotten. These, too, did good service and in some cases (e.g., in connection with the display of the Fleet) achieved results not easily otherwise obtainable. A reminder of this fact is furnished by a leaflet which we have received from the London Electric firm, illustrating 24 in. display searchlights. These are supplied on sale or hire for many special occasions (e.g., fêtes, civic weeks, exhibitions, tattoos, etc.), besides serving useful industrial purposes.

The "Superscope"

Here is a simple form of apparatus, the "Superscope," supplied by Super-Tools, Ltd., which is, in effect, a simple epidiascope, and should interest readers of this journal. It can be readily used for demonstrations or for producing an enlarged sketch of a design, which can be traced out by the artist in pencil, thus furnishing a basis for the final picture.



This device can be worked from the nearest lamp connection, and when placed over a sketch or photo in a dark room projects an enlarged image on the screen.

At the I.M.E.A. Convention

The above picture illustrates the stall of the E.L.M.A. Lighting Service Bureau at the I.M.E.A. Convention in Brighton, which was devoted largely to a display of the applications of electric discharge lamps to industrial, street, and floodlighting. Methods of enabling the lamps themselves to be examined without dazzle were carefully planned. A novel feature was a complete fitting, comprising armchair, floor standard, and built-in light-measuring apparatus, enabling the visitor to experiment with varying degrees of illumination in comfort. The picture gives an idea of the arresting appearance of the stand, which was designed by Mr. R. O. Sutherland.

The Exhibition was again an extensive one, about eighty firms and bodies taking part. Amongst them were a number of leading firms in the lighting industry, including Benjamin Electric, Ltd., the British Thomson-Houston Co., Ltd., Edison Swan Electric Co., Ltd., Falk Stadelmann and Co., Ltd., the General Electric Co., Ltd., Holophane, Ltd., Revo Electric Co., Ltd., and Siemens Electric Lamps and Supplies, Ltd.

Several exhibitors send us particulars of their displays. In those of the above firms the newest electric discharge lamps, coiled coil lamps, lanterns, reflectors, and floodlighting equipment figured largely.

Radiovisor at the I.M.E.A.

We see that the exhibit of Radiovisor Parent, Ltd., at the I.M.E.A. Exhibition at Brighton illustrated several novel applications of their light-actuated control system. In addition to its familiar use for the control of lighting (e.g. street lamps, traffic island beacons, illuminated signs, etc.), the device has many special industrial applications. Of these the time-counting device and the smoke-indicator are now widely known, but the apparatus for flame-control in oil furnaces is still relatively new. The apparatus does not depend on the heating action of the flame, but on the light-rays emitted. It will shut down the burner completely with two to three seconds of a flame failure.

Sordoviso Relay Units

We recently made some reference to the new form of contactor introduced by the Sordoviso Manufacturing Company in which ingenious use of mercury contacts is made. One of the new relay units utilising this special mercury switch is here illustrated. The relay will operate on both a.c. and d.c., and is supplied in two types with the very low consumptions of 0.75w. and 0.15w. respectively. Such relays are finding many applications, and form the basis of the "silent bell" and staff locating systems with which the Sordoviso Company is associated.

Parade Lighting at Aberystwyth

Visitors to Aberystwyth this summer will find that they are able to enjoy their evening walks on a brilliantly lighted promenade, on which thirty-six Revo units, fitted with 160° upper refractors and lenticular glass under refractors, equipped with 300-watt lamps, have been installed. The units are mounted approximately 22 ft. high, on double-arm brackets with a 6 ft. spread, which are erected on the existing standards, spaced about 150 ft. apart.

The picture gives a good impression of the effect of this new installation, which enables the sweep of the bay to be clearly seen.

I.E.S.: Revision of List of Members

As usual, the list of members of the Illuminating Engineering Society is undergoing revision during the vacation. Intimations of any further changes of address should reach the Hon. Secretary by July 1.

Change of Address

We learn that Mr. Waldo Maitland (Waldo Maitland and Partners) has removed his office to 32, Fitzroy-street, Fitzroy-square, London, W.1. (Tel.: Euston 4972.)

Coronation Ball Lighting

It was fitting that Strand Electric and Engineering Company, Ltd.—early pioneers of stage lighting—should have been called upon to carry out the lighting of the Coronation costume ball organised at the Royal Albert Hall on May 13, in order to help to provide a national theatre. Over 3,000 guests were present, including members of the Royal Family. Besides historical scenes such as the Court of Queen Elizabeth (Lady Oxford taking the role of Queen Elizabeth), a series of tableaux were shown, demonstrating the evolution of the theatre from the earliest Greek drama to the modern stage. Over 100 flood lanterns of different types were used, the special Strand "Pageant" lantern, originally designed for the Tower of London Tattoo, being largely employed.

Other special work carried out by the same company included the floodlighting of Kingston Bridge, here illustrated. This involved the use of twenty-four "Pageant"

Kingston Bridge floodlighted.

lanterns placed at the side on the river bank. A feature was the evenness of illumination across the width of the bridge.

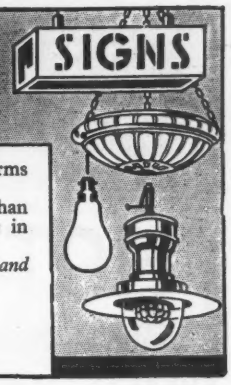
SITUATIONS VACANT

The Curtis Lighting Company, manufacturers of X-Ray Reflectors and Lighting Equipment require energetic young men with a knowledge of illuminating engineering to train as Sales Engineers for London and Provinces.—Particulars of education and previous experience should be addressed in confidence to the Managing Director, Curtis Lighting Co. of Gt. Britain, Ltd., Aldwych House, Aldwych, London, W.C.2.

I.E.S. Visit to Paris

Members of the Illuminating Engineering Society are reminded of the proposed visit to Paris, to view the lighting of the International Exhibition, on July 16 (probable inclusive cost £7—£10). Any who still wish to join the party are desired to send in their names without delay.

·WHERE TO BUY·
A DIRECTORY OF LIGHTING EQUIPMENT



We invite applications for spaces in this new section of the journal. Particulars of terms for each space (approx. 1 inch deep and 3½ inches wide) are given below.

These terms are equivalent to **half our ordinary advertising rates,** but not less than 12 successive monthly insertions can be accepted on this basis, and amounts are payable in advance.

Payment for an advertisement in this section entitles the advertiser to receive *Light and Lighting* during the period of the contract.

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Index to "Where to Buy"

N.B.—The numbers are those attached to individual entries in the Directory (See pp. 183-185).

Notes on Gas Lighting

Salford Corporation Gas Department have completed the first instalment of the £25,000 improvement scheme for street lighting, which is to be spread over three years. Seven miles of bus routes and about six and a half of the eleven miles of heavy traffic routes have already been dealt with; 2,000 conversion sets have been applied in existing lanterns, and 500 two-light units complete on existing pillars. On the bus routes each unit comprises a six-light mantle suspension lamp, mounted eighteen inches from the kerb, at a height of eighteen feet. Lamps are staggered at distances of about thirty-three yards. In the heavy traffic streets four-light strip lamps, in eighteen-inch square lanterns, are mounted in a similar manner.

Other recently announced contracts for street lighting with gas include Glossop (five years), Truro (seven years), Mablethorpe and Sutton (six years), St. Austell (three years), Cockley and Walverley, Kidderminster (five years), Gorebridge (six years), and Harthill (five years).

Improvements are being carried out in the gas lighting of the Burgh of Johnstone, where twelve-light lamps are to be installed in the centre of the town and at main corners. Twenty-five lamps will be immediately affected, and the remaining lamps will be converted over a period of two years. The gas lighting of several streets in Blackburn is also to be improved.

Catalogues and Advertising Literature

We invite all firms in the Lighting Industry to send us new catalogues as they appear, for reference in these columns.

BENJAMIN ELECTRIC, LTD.—Illustrated booklet on Electric Discharge Lighting; new and special fittings for use with these lamps are illustrated. Also Technical Data on Artificial Lighting, a booklet presenting fundamentals of good lighting, charts, and data for planning lighting installations.

BRITISH THOMSON-HOUSTON COMPANY, LTD.—Leaflets featuring Mazda Light Tubes (Alphabet Series) and the new 80 watt and 125 watt Mazda Mercra lamps.

CURTIS LIGHTING COMPANY OF GREAT BRITAIN, LTD.—Illustrated leaflets dealing with Floodlight Projectors, Luminaires for Silvered Bowl Lamps, and "Attraction Zone" Show Window Lighting.

THE GENERAL ELECTRIC COMPANY, LTD.—An imposing illustrated booklet revealing the wide scope of the G.E.C. organisations and touching on varied fields of work, including Lighting Installations. Also leaflets relating to the new Osira 80 watt and 125 watt Electric Discharge Lamps and catalogues of Lighting Fittings and Accessories.

KANDEM ELECTRICAL, LTD.—Illustrated leaflet featuring Coronation Floodlighting.

METROPOLITAN PIPE AND POLE COMPANY, LTD.—Catalogue of Ferro-Concrete Poles for Lighting and Traction.

PHILIPS LAMPS, LTD.—An original and interesting Coronation brochure containing facsimiles of Letters of Historic Interest. Also copies of the Philora Bulletin illustrating Sodium Lighting Installations in various parts of the world.

SIEMENS ELECTRIC LAMPS AND SUPPLIES, LTD.—Leaflet describing the "Lumenic" Lighting Unit, a somewhat unusual combination fitting.

Contracts Closed

THE BRITISH THOMSON-HOUSTON CO., LTD.

The Air Ministry, War Office, and H.M. Office of Works.—For the supply of Mazda Lamps during the next twelve months.

SIEMENS ELECTRIC LAMPS AND SUPPLIES, LTD.

The London County Council, War Office, and H.M. Office of Works.—For Siemens Lamps over a period of twelve months.

THE ELEMENTS OF GOOD LIGHTING

WHY AN UP-TO-DATE PRINTER CHOOSES GAS

There are still many people who associate gas lighting with antimacassars and aspidistras and do not realise that it has made as much progress as other forms of lighting. It may, therefore, come as somewhat of a surprise to such people to find such progressive printers as Messrs. George Reveirs, Ltd., choosing gas lighting for their new works at Rosebery-avenue, E.C.1, after going very thoroughly into the matter.

It should not be surprising, when it is remembered that the principal streets of Westminster, including Whitehall, are lit by gas. Observant people, especially motorists, comment upon these streets as the best lit in London.

Let us consider these advantages that induced Messrs. George Reveirs, Ltd., to adopt gas lighting.

It's real light that matters

The amount of real visibility given by a lamp depends not only on the candle power of that lamp but also on the colour properties of the light, on the absence of glare and on its diffusive power. In other words, the nearer we get to daylight the better. The ordinary incandescent gas mantle gives light which approximates more nearly to daylight than any other commercial artificial illuminant. It shows things up in their true colours and reduces eyestrain. By using "daylight" mantles an even nearer approach to natural daylight is achieved.

The source of brilliance in gas lighting is so large that glare is almost entirely absent. During the floodlighting display in London everybody remarked upon the beautiful soft, diffused light given by the gas floodlighting.

Reliability

Another important consideration is reliability. Gas lighting has never been known to fail. Therefore expensive emergency lighting installations are quite unnecessary. A district "black-out" can be, and has been, a cause of serious loss and disorganisation to printers and newspapers.

As for convenience, catalytic control has given the gas lamp the wall switch so that it can be lit in an instant from the doorway of the room, or other convenient point of control.

Then comes the question of cost, and here again gas scores heavily. For a similar amount of effective illumination gas is cheaper than other illuminants, or, alternatively, for a given expenditure a larger amount of effective illumination can be produced by gas than by any other means, a point of some importance in view of the tendency towards higher illumination values. Then again, gas mantles cost less, they last longer, and their depreciation in candle power is almost negligible.

Gas lighting assists heating

Another factor to be considered when comparing cost is the appreciable amount of warmth given by gas lamps. This saves on the heating fuel bill, and Messrs. George Reveirs find that the gas lighting gives sufficient warmth in spring and autumn to obviate the necessity of running the central-heating plant. This heat is used on some machines to dry the sheets as they are passed out.

These considerations show that there is a very strong case for gas lighting, and anyone in the position of choosing the lighting for a building would do well to obtain expert advice on the subject. This can be obtained by writing to the British Commercial Gas Association, at Gas Industry House, 1, Grosvenor-place, London, S.W.1, who will provide the information or put the enquirer in touch with the body best equipped to assist him. [ADVT.

Gas lighting in the binding and folding room of a modern printing works.

Printed by the ARGUS PRESS, LTD., Temple-avenue and Tudor-street, London, E.C.4, England.